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T. PASCOE,

Minister of Agriculture.

POINTS FOR PRODUCERS.

The Importance of Cultivation.

Whilst the wheat plant is probably second to no other in its capacity to produce a crop upon all sorts of soils, when left to itself it cannot stand up against the competition of weeds. Just how important cultivation is to the wheat is demonstrated by an experience at the Rothamsted Experimental Station, England. There a wheat crop was once left unharvested to sow itself without further cultivation, and by three years, to use the words of Sir A. D. Hall, K.C.B., F.R.S., the wheat had entirely disappeared in the grassy wilderness that had sprung up.

Fire.

The luxuriant growth of vegetation which is evident in most districts this season materially increases the danger from fire, and it is well that landholders should have their attention forcibly directed to this danger. The Bush Fires Act of 1913 empowers district councils to appoint officers to assist in the prevention and suppression of bush fires. The Local Government Department has recently directed the attention of councils to the powers conferred on them by the Act in question. It is to the individual, however, that this appeal is made. Too frequently damage is done through carelessness or ignorance. In the matter of stubble burning, farmers should remember that burning between October 16th and January 31st, both dates inclusive, is illegal. Firebreaks for stubble burning may, however, be lighted during that period, after the following conditions have been observed:—(1) The strip is not to be more than 2 chains nor less than ½ a chain wide. (2) Before lighting the fire the land alongside the strip to be burnt is ploughed to a width of 3ft. or cleared of all scrub, stubble, and other inflammable material to a width of 5ft. (3) Twenty-four hours' notice to be given to owners and occupiers of adjoining land if resident within five miles of the place intended to be burnt. (4) Four men must be present at the fire. (5) No such fire is to be lighted before 9 o'clock in the morning, and it must be extinguished by 9 o'clock at night. The burning of firebreaks or of stubble on Crown lands held under lease, agreement, or licence must, in addition to the foregoing, be preceded by 24 hours' notice to the nearest Crown lands ranger or police constable. Stubble may be burnt between February 1st and October 15th, both inclusive, under conditions 2, 3, and 4, above mentioned. No fires are to be lighted for stubble burning on a Sunday. Scrub burning between October 16th and January 31st inclusive, is illegal, and between February 1st and April 30th is subject to certain conditions. Among other points, it should be observed, that smoking is prohibited within 20yds. of any stable, rick, stack, or field of hay, straw, stubble, or other inflammable vegetable, from November 1st to April 30th, except within a town, or with a pipe properly covered.

Marrow Stem Cabbage.

"Chou moellier," or preferably, to give its English equivalent, "marrow stem cabbage," is an exceedingly useful forage crop under suitable conditions. I have no doubt, says Professor Arthur J. Perkins, but that it will grow very well on the lower reaches of the Murray. It may either be drilled in, like kale, at distances sufficiently apart to admit of tillage during the early stages of growth, or it may be sown in a seed-bed like cabbage, and transplanted. The latter is the practice adopted in the neighbourhood of Mount Gambier by dairymen. It is customary in such cases to strip the leaves from time to time and feed them to the cows. Only the mature or lower leaves are broken off, so that the plants are constantly making new growth. This involves a certain amount of hand labor in dealing with the crop. The alternative is to drill the crop in through the manure openings of the drill at 24in. to 28in. apart, and use about 1lb. of seed to the acre, carefully mixed with ½cwt. of bonedust. Needless to say, a crop of this type cannot be used as hay, but must be used direct as green fodder. If carefully handled, it may be made to last 18 months. Personally, I think it is well worth being given a trial on the swamps, and I strongly recommend in that case that either the young plants or the seed-bed be put out early in the autumn before the ground becomes too cold.

Cereal Crops in 1920.

The September "Bulletin of Agricultural and Commercial Statistics" just published by the International Institute of Agriculture announces that the United States wheat crop of 1920 is estimated at 21 million metric tons (14.5 million winter and 6.5 million spring wheat). The latest estimate of the Canadian crop is 7.9 million tons, while the stocks of old crop wheat in the United States on July 1st were 4.1 million tons. The aggregate North American supply of wheat for the current season is therefore 33 million tons, as compared with 32.4 millions in 1919, and an average of 31.8 millions during the previous five years. These data all include estimates of old stocks at the beginning of July, and indicate that the North American supply of wheat for 1920-21 is apparently much as usual. Farm preparations for the winter wheat crop of 1921 are progressing favorably. The rye crops of Canada and the United States are 2.3 million tons. The available surplus of rye is appreciably below last season's, as the North American crops of 2.5 million tons in 1919 were supplemented by old stocks, since exported. Including the North American data, estimates of the Northern hemisphere wheat crops of 1920 from the following countries:—Spain, Italy, Algeria, Tunis, Bulgaria, Finland, Switzerland, British India, and Guatemala, amount to 48.4 million metric tons, as compared with the same aggregate of 48.4 millions in 1919, and an average of 49.2 millions during the previous five years. Exclusive of Russia, these quantities are about 70 per cent. of the wheat production in the Northern hemisphere. Definite data from many countries are still unavailable, but the wheat crop is reported as above average in Austria, Czecho-Slovakia, Denmark, France, Netherlands, and Sweden, average in Germany and Ireland, and slightly under average in England and Scotland; while rye is good in Austria, Netherlands, and Sweden, but below the average in Germany, Czecho-Slovakia, and Poland. Reports on the course of the Indian monsoon have been fairly favorable, generally speaking, for rice and other summer crops, but more rain is requisite in the areas to be sown with wheat. Karachi wheat prices have advanced about 5 per cent. The preliminary estimate of area under wheat in Argentina is 6.5 million hectares, 7 per cent. larger than last year's, but 3 per cent. below the average. The aggregate in Argentina, South Africa, and Australia, comprising 92 per cent. of the wheat producing area in the Southern hemisphere, is estimated at 11.5 million hectares, 28 per cent. more than in 1919 and 2 per cent. above the average. None but favorable accounts of the growing wheat crop come from Australia, while the official report from Argentina forecasts an average yield.

Butter Substitutes.

The possibility of so-called butter substitutes, and their likely effect on butter production, must at some time or other have exercised the minds of most people engaged in dairying. If any have feared that there was a likelihood of these substances displacing butter as an article of diet, their fears will to a certain extent be assuaged by the results of investigations recently conducted by Mr. Otto F. Hunziker, B.S.A., M.S.A., formerly Professor of Dairy Husbandry, Purdue University. Chief economic interest is centred in the determination of this investigator that there is no substitute for butter. So-called butter substitutes, all of which are largely made up of vegetable or animal fats, or both, cannot take the place of butter. They may have equal, or nearly equal, caloric value as butter, but they lack a most important property, called fat soluble A, without which the diet is not complete. Their substitution for butter in the diet of a family, the report concludes, is jeopardising the wellbeing, vitality, and maximum mental and physical development and vigor of the child, and to that extent limits the future greatness of the nation.

Manurial Tests with Mangels.

A member of the Meadows Branch of the Agricultural Bureau (Mr. Nottage), at a recent meeting, intimated that he had, during the past season, conducted manurial tests with Yellow Globe mangels. Three plots were tested. Each plot received a dressing of farmyard manure at the rate of 30 tons to the acre, which was ploughed in about the end of July, 1919. Plot No. 1 received, in addition to the farmyard manure, 4cwts. super, applied with the seed, and plot No. 2 received, in addition to the farmyard manure, 4cwts. of super with the seed and a top dressing of 2cwts. nitrate of soda at thinning out. Plot No. 3 was dressed with farmyard manure only. The yields secured were:—Plot No. 1, 21 tons per acre; plot No. 2, 26 tons per acre; and plot No. 3, 16 tons per acre. Thus it will be seen that a 5-ton per acre increase in the crop was received for the dressing of 4cwts. super per acre, and a 10-ton increase for 4cwts. super and 2cwts. nitrate of soda, equal to a 5-ton increase for 2cwts. of nitrate of soda.

Imports and Exports of Fruit, Plants, &c.

During the month of October, 1920, 5,613bush. of bananas, 1,686bush. of fresh fruit, 15,249 bags of potatoes, 116bush. of cucumbers, 6 packages of bulbs, 26 packages of plants, 46 packages of seeds, 2 packages of trees, and 1,310 empty wine casks were examined and admitted at Adelaide and Port Adelaide under the Vine, Fruit, and Vegetable Protection Acts, 1885 and 1910. Of these 2 packages of trees and 18 empty wine casks were fumigated. Under the Federal Commerce Act, 4,243 packages of dried fruit, 2,101 packages of citrus fruit, and 4 packages of jam were exported to overseas markets. These were consigned as follows:—For London—4,236 packages of dried fruit, 4 packages of jam. For New Zealand—2,101 packages of citrus fruit, 7 packages of dried fruit. Under the Federal Quarantine Act, 1,552 packages of seeds, &c., were examined and admitted from overseas sources.

During the month of November, 1920, 9,370bush. of bananas, 1,351bush. of fresh fruits, 68bush. of cucumbers, 6,381 bags of potatoes, 8 packages of bulbs, 16 packages of plants, 24 packages of seeds, and 600 empty wine casks were examined and admitted at Adelaide and Port Adelaide under the "Vine, Fruit, and Vegetable Protection Acts, 1885 and 1910." Of these 7bush. of bananas and 9bush. of pineapples (over ripe) were destroyed, and 1 empty wine cask was fumigated. Under the Federal Commerce Act, 1,256 packages of citrus fruit, 13,660 packages of dried fruit, 1 package of preserved fruit, 108 packages of jam were exported to overseas markets. These were consigned as follows:—For London, 13,660 packages of dried fruit and 108 packages of jam. For New Zealand, 1,256 packages of citrus fruit. For Batavia, 1 package of preserved fruit. Under the Federal Quarantine Act 1,307 packages of seeds, &c., were examined and admitted from overseas sources.

RANDOM AGRICULTURAL JOTTINGS.

[By Arthur J. Perkins, Director of Agriculture.]

The Murray Bridge Branch of the Agricultural Bureau is to be congratulated on having brought about the formation of the first Herd Testing Society in South Australia; and without invidiousness it is permissible to associate with this achievement the name of the indefatigable secretary, Mr. A. R. Hilton. It is true that in the earlier portion of the year both Mr. Suter and I had hoped that the older-established dairy districts of the South-East would have led the way in a matter of so much concern to them. But it was not to be; an unfavorable season and a regrettable inadequacy of garnered foodstuffs caused local dairymen to baulk the first step. Let us hope that with their great natural resources and the special adaptability of their districts to dairying they will hasten next season to make up for lost time. On the whole, however, and from the departmental viewpoint, it is perhaps as well that we should have no more than one Herd Testing Society on our hands in the opening year of operations. We are able to make much of our solitary possession, and to give to it our exclusive attention; and unquestionably the experience gained will serve us in good stead when numbers begin to expand.

* * * * * *

The River Murray Herd Testing Association started operations on the 1st of October of the present year, with 16 foundation members, who brought with them 285 cows, or approximately an average of 18 cows to the herd. And it is understood that several others contemplate joining up at an early date. The association may be considered fortunate in having secured the services of Mr. F. O. H. Martin as recorder. Mr. Martin holds the Diploma of the Roseworthy Agricultural College, and has a sound knowledge of dairying; he will, I feel sure, discharge his delicate duties to the satisfaction both of the local executive and of the department.

* * * * * *

The River Murray association has decided to adopt the suggested rules and regulations outlined in the May number of the *Journal*. Later experience will no doubt show in what direction amendments or additions are advisable. The annual subscription has been fixed at £1 1s. per member, and working expenses are to be defrayed by periodical levies on all cows registered. It is as well to recall that under existing rules all cows, whether dry or in milk, the property of members of the association, must be registered, and that all will be taken into consideration in the yearly determination of the average milk and butter-fat output of the herd. Every cow will receive a number, which will be tattooed into her ear; and in the course of time, when herd testing has established the reputation of the River Murray herds, these numbers will undoubtedly assist dairymen in the disposal of saleable cows. The association has decided that owners shall weigh once a week the milk of all their cows. In addition to this, the recorder will pay monthly visits to all milking sheds, take the weights of morning and evening milk, and forward samples of the same to the department for testing purposes. Matters of public interest in this connection will be published from time to time in the pages of the *Journal*, although not necessarily under the names of members.

* * * * * *

The executive of the association has already been confronted with one difficulty which calls for careful handling. Under existing rules, every cow that has dropped her first calf, and is the property of a member of the association, must be registered as part of the milking herd. The object of this rule is to ensure an improved general output from the herd as a whole, and not merely from a few selected animals. It is assumed that this will be brought about by the gradual discarding of unprofitable milkers, and by the adoption of good feeding practices for the whole herd. If the opposite policy were adopted, and members were allowed to register a few selected cows, a more striking form of advertisement would, no doubt, be the result; but the question of low average herd output would remain untouched, and the rank and file would be neglected in the interests of the pampered few. It must be clear, therefore, that if herd testing is to be of value, not to the individual only, but to the State as well, every cow in the herd must be registered and tested. Moreover, and apart altogether from this aspect of the question, all members are competitors for important cash prizes, and it is essential that they be protected against any possibility of unfair dealing.

I am prepared to admit, however, that the position at Murray Bridge is somewhat complicated. Some members of the association are dealers as well as dairymen—they buy cows at one market and may dispose of them at the next; hence, they argue that since these cows are not part of their normal milking herd, it should not be compulsory to register them as such. There is no doubt a good deal in this argument; nevertheless, if these cows are in milk, they will be milked by their owners, and to that extent, and for the time being, become part of the milking herd. Again, whilst it might well be the owner's intention to sell at the next market, circumstances might go against him, and the cows be left on his hand for an indefinite period. In order to meet cases of this kind, it was recently suggested at a meeting of the committee of management that the rule governing this question should be amended, so as to enforce registration only in the case of cows in the possession of members for one month or more. To this proposal I replied verbally that, rather than lose valuable members of the association, the department would probably accept the amendment, providing it is asked for by a majority of not less than two-thirds of the members. Should eventually the amendment be passed, it would become incumbent on the recorder to keep a careful eye on all such cases.

* * * * * *

Closely akin to the matter is the unsatisfactory cow that the owner has definitely decided to dry off, fatten, and sell. When does she cease to form part of the owner's milking herd? In my opinion, as soon as she has been dried off, or on the completion of her 319 milking days, should it have been definitely settled to sell her as soon as she is in suitable condition for the purpose. All such cases should be notified to the recorder at the first opportunity, and by him to the committee of management and to the Director of Agriculture.

* * * * * *

It may be as well to recall here the special inducements which have been offered by the Government towards the formation of these herd testing societies. In the first place, it has agreed to bear half the expenses incurred by each society up to a total of £200 per society per annum. Payments of the subsidy will be made quarterly, on the acceptance by the Director of the schedule of the society's accounts. In addition, important cash prizes have been offered for annual competition in each society. Prizes of £50, £25, and £10 respectively will be awarded each year to the three herds of each society with the highest average output of butter-fat, provided that the average output of a winning herd must not be less than 300lbs. Should the average output of butter-fat, on the other hand, attain to 350lbs., the prizes will be raised to £75, £37 10s., and £15 respectively; and should it attain to 400lbs., to £100, £50, and £20 respectively. Finally, when more than one herd testing society has been established in the State, a special Champion Prize of £100 will be awarded to the herd with the highest average output, provided the latter attains to 400lbs. or over. As the effects of herd testing gradually make themselves felt in the State, these standards will no doubt be varied; in the meanwhile they stand, and it is hoped that the prizes and subsidies offered will lead to the early formation of herd testing societies throughout the State. It is in any case questionable whether more liberal inducements have been offered in any other country.

* * * * * *

What, then, are the peculiar advantages of these societies, and why should the State interest itself specially in their promotion? On the whole, they may be said to represent a very effective means of increasing production in a very important State industry, capable of almost indefinite expansion; and in the circumstances and in the times, the special interest of the State in the matter is fairly obvious. The State, no doubt, is interested in the average output of the herds of owners of choice pedigree stock; the advantages reaped from them, however, are indirect rather than direct, since they do no more than supply evidence that bulls with good milking pedigrees are available in the State. But the interest of the State in the average output of the dairymen as a whole is otherwise great. After all, it is upon them that directly depends the production of an important commodity of local consumption and of export. And as we all know, this production is only partly dependent upon breeding; to an equal degree is it dependent upon adequate and intelligent feeding. And, again, as we all know, the latter point is too often overlooked by many dairymen. Hence, the belief—which has been upheld by events elsewhere—that by banding dairymen together into herd testing societies, by stimulating them by the offer of special advantages, the spirit of emulation, if not that of profit, will gradually lead to the adoption of cows of a better type, and to more profitable methods of feeding. The latest statistics show that the average annual output per cow in South Australia is approximately 312galls. of milk; there appears to be no reason why this output should not be doubled, and it is anticipated that herd testing societies will do much towards bringing this about.

* * * * * *

Linked up with the question of herd testing is that of saving and rearing heifer calves from cows which tests have shown to be desirable and profitable. Deep milking tendencies have been shown to be hereditary, and if we cannot renew our herds from the calves of our best cows, half the advantages of herd testing will be lost. The type of bull generally used by the average dairyman is often made a subject of reproach to him; but if he cannot rear his calves, why should he go to the expense of costly, if valuable, bulls? The position is that the average dairyman occupies a small holding; he is intent on the production of milk; he cannot afford to have idle mouths eating out his fields; and he disposes of his young stock as veal. This is regrettable, and might be met by provision for commonage, or the availability of cheap land on which heifers can be kept until they drop their first calves. We meet with this difficulty on the lower reaches of the Murray and again amongst the dairymen of Moorak. It is to the interest of the State that it should be overcome. Surely it is not beyond our powers to do so.

INQUIRY DEPARTMENT.

Any questions relating to methods of agriculture, horticulture, viticulture, dairying, &c., diseases of stock and poultry, insect and fungoid pests, the export of produce, and similar subjects, will be referred to the Government experts, and replies will be published in these pages for the benefit of producers generally. The name and address of the inquirer must accompany each question. Inquiries received from the question-boxes established by Branches of the Agricultural Bureau will be similarly dealt with. All correspondence should be addressed to "The Editor, *The Journal of Agriculture*, Adelaide."

[Replies supplied by C. A. Loxton, B.V.Sc., Government Veterinary Surgeon.]

"G. H. W.," Tarcowie, reports horse that hangs his tongue out when at work.

Reply—It is probably a habit due to the pressure of the bit in the mouth. There has possibly been a previous injury to the tongue. If the habit is recent, examine the mouth and tongue for injuries from bit, ulceration, grass seeds, &c.

"D. H. C.," Clare, has horse with large swelling on belly. Lump is reasonably soft, but varies in size at different times.

Reply—A rupture in this region is a protrusion of bowel through the belly wall nto a sac formed by the skin. The characteristic of this condition is that it can be reduced, that is, the contents of the swelling pushed back, and the opening in the wall of the belly can then be felt. The alteration in size is suggestive of rupture. You should have no difficulty in deciding in a few days, when the more acute symptoms have subsided.

"W. B. H.," Bletchley, reports death of young pigs, front feet highly colored, cramped hindquarters, sluggish.

Reply—The probable cause of death is infection through the navel (navel ill). Preventive treatment consists in providing clean, dry pens for farrowing. It would be advisable to thoroughly disinfect the pens where deaths have taken place. Remove all litter and spray them out with kerol or other cheap coal tar disinfectant, one part to 20 of hot water.

"W. N.," Kingscote, reports aged mare, unable to swallow; passes large quanity of frothy substance, and has a slight cough.

Reply—The mare has laryngitis (sore throat). Give her the following medicine:—Green extract of belladonna, ¼oz.; camphor, ½oz.; chlorate of potash, 1oz.; honey, 4ozs.; glycerine, 4ozs.; mix. Give about one tablespoonful by placing on ongue and back teeth two or three times a day. Do not give her any medicine n the form of drenches. Put her on green stuff. Water her with a bucket, and give her 2ozs. Epsom salts daily in the drinking water. Place both food and water at a convenient height. Isolation desirable. It is possible that abscess formation may take place. If any external swelling take place in region keep under observaion.

"K. Mc.T.," Moorak, has cow with white growth on the eye.

Reply—The treatment of this case is surgical removal by a skilled operator. The urgency of the operations depends upon the rapidity of growth. If it is howing active growth the sooner it is removed the better.

"A. V. C.," Narridy, reports foal three months old, born with front feet urned over at the fetlock. The feet straightened out fairly well, but the near ide foot is still very weak.

Reply—It may be sufficient to attend to the foot by lowering the heels with a asp. If this is not satisfactory apply a light temporary shoe with a long toe piece, so as to throw him back on the heel.

"A. L. J.," Springbank, reports colt two years old with lump on the jaw, which alternately breaks out and heals up.

Reply—It is not likely that the trouble is a cancer. If the colt has had the strangles it may be the after effect of this disease, or it may be due to some foreign body, such as grass seed. If on the jawbone it is likely to be due to a diseased tooth. The wound must be opened up so as to drain it effectively, afterwards dress daily by syringing out with a disinfectant solution. Make an examination of the mouth. If a diseased tooth exists it must be removed.

"E. H. C. S.," Kybybolite, forwarded specimens of small worms found in a water trough and asks if they are injurious to animals.

Reply—These worms are frequently found in water troughs, and are not related to worms infesting any class of stock.

Hon. Secretary, Agricultural Bureau, Morphett Vale, reports temporary blindness of sheep.

Reply—The commonest eye disease of sheep is contagious conjunctivitis (inflamation of the eyes). Affected sheep should, if possible, be isolated. Make suitable provision for feed and water. Apply a few drops of the following lotion daily with an eyedropper:—Sulphate of zinc, 12 grains; tincture of opium, 1½ drams; distilled water, 4ozs.; mix. This should be dispensed by a chemist.

Secretary, Hartley Agricultural Bureau, asks treatment for dog with grass seed up nostril.

Reply—You may be able to remove this with a pair of narrow forceps, but probably a special instrument would be necessary. Try to wash it out by gentle irrigation with lukewarm water containing a little bicarbonate or soda. Use a small glass syringe, such as may be obtained from any chemist.

"E. L. C.," Borrika, reports gelding, nine years old, that rolls its eyes about when approached by a person or another horse. Yellow film nearly covers the whole of the eyes. Animal is also somewhat stiff in hindquarters.

Reply—These are symptoms of tetanus, a disease due to infection of a wound. You should place him in a darkened stable and keep him quiet and as little disturbed as possible. Place his feed and water at a convenient height so that he can obtain them without trouble. Give him soft, easily digested food. Do not drench him, but give him the following:—Green extract of belladonna, 1oz.; bromide of potash, 2ozs.; treacle, 4ozs.; mix. One tablespoonful three times a day on the tongue. Give also Epsom salts, three ounces daily, in mash or in drinking water.

"H. B.," Neeta, asks:—(1) Is the native tobacco tree injurious to pigs. (2) Cow with small lump inside teat, very hard to procure milk at beginning, been in milk 17 months.

Reply—(1) Yes. (2) If the obstruction is high up in the teat it will be difficult to deal with. If at the lower part you should get good results by using a teat dilator. This instrument, which should be boiled for a few minutes previous to each time of using, is inserted into the teat and removed several times, repeated stretching being necessary. The dilator should be held in the teat for a minute or two and then withdrawn, the stretching of the canal being repeated six or eight times every day for a few days.

"E. M.," Meribah, has filly that three years ago sustained severe barbed wire cut on chest. Lump forms and then breaks open, and the filly rubs the sore until it bleeds.

Reply—The recurrence of the trouble with this injury is probably due to the presence of some foreign body. It should be thoroughly opened up and explored, a good opening being made so as to provide effective drainage. Afterwards irrigate daily with a syringe and disinfectant solution. It is useless trying to heal it by putting application on the external wound.

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Hon. Secretary, Agricultural Bureau, Mount Bryan East, asks for description of maggot found in sheep's head.

Reply—These are the larvae or "bots" of the sheep nasal fly. This insect deposits her eggs about the nostrils of sheep. The young forms reach the hollow cavities of the head when they attach themselves to the lining membranes by means of two hooks. They remain in this situation for about 10 months, when they become detached and are expelled in the process of sneezing. The rest of the life history takes place outside of the body. If few in number they cause little trouble, but if numerous may cause a good deal of irritation and consequent loss of condition. It is not an uncommon thing to find two or three in the head of fat sheep killed for mutton.

Hon. Secretary, Agricultural Bureau, Cygnet River, reports mare, eight years old, slipped foal. Later developed cough, with considerable froth at mouth and nostrils. A slight swelling under the tongue is noticeable, which broke and left a wound.

Reply—I do not think that the foaling had anything to do with the trouble, which appears to be irregular strangles. Put her on light diet, keep her under observation, and dress wound with disinfectant lotion.

"G. W. K.," Loxton, asks for remedy to keep blow flies away from slaughter house.

Reply—The best protection from this pest at slaughtering places is perfect cleanliness. Do not allow material which will attract flies to remain in the vicinity. Thoroughly clean up and remove all blood and other matter directly after killing. Sprinkle quicklime freely about slaughtering place after cleansing.

"G. and J. F.," Taldra, have young horse, four years old, with a growth of proud flesh in the corner of one eye.

Reply—Growths in the corner of the eye are very common. The only treatment is surgical removal. For the purpose you should have a little 5 per cent. cocaine solution, a pair of forceps, and a pair of curved scissors. The cocaine solution can be dropped into the eye with an eyedropper, and will take a few minutes to produce its effects. Take hold of the growth with the forceps and extend the "haw" so as to expose it fully. Remove the growth with the scissors, cutting below it so as to include some of the healthy tissue. Wash with a little cold boracic solution. The operation can be done standing with the use of a twitch.

"F. R. B.," Mundoora, has mare, four years old, with numerous sores on the body.

Reply—I recommend you to put her on cooling diet, mashes, &c., and green stuff if procurable. Give her Epsom salts 2ozs., and saltpetre one teaspoonful daily in her drinking water. Apply daily to the eruption a little zinc ointment.

"K. McL.," Orroroo, reports (*a*) young pigs with scabs on bodies, and (*b*) cow that drops food out of her mouth when chewing the cud.

Reply—(*a*) The skin trouble in young pigs is probably due to the effects of lice. I recommend you to treat them with a 2 per cent. creolin wash. This can be applied by dipping, spraying, or hand dressing. Cooper's milk oil fluid is a cheap and effective dressing. Use half a pint to three gallons of water. The styes also should be thoroughly cleansed and sprayed. (*b*) You should make an examination of the mouth. There are several conditions which may cause this symptom, such as defective teeth, effects of grass seeds, injuries, or disease on tongue, &c.

DEPARTMENTAL DOINGS.

AMONG THE AGRICULTURISTS.

During the month the Director of Agriculture (Prof. Arthur J. Perkins) visited the Mount Remarkable Training Farm and also took part in the annual tour of the South-Eastern districts of the State.

On November 2nd the Superintendent of Experimental Works (Mr. W. J. Spafford) visited the North Booborowie Bureau and delivered an address, "Points in Wheat Growing." A meeting of the Butler Branch of the Bureau was attended on November 9th, and an address delivered on the subject, "Cultivation for Wheat Growing." An invitation to address the members of the Yacka Branch was accepted on November 16th, and the subject, "Experimental Plots and Rotation of Crops," was discussed. Addresses were also given before the Mount Remarkable Trainees and the Ashbourne Bureau. The Yeelanna and Butler Experimental plots were inspected, and visits paid to the Booborowie and Mount Remarkable Farms. Mr. Spafford also visited Naracoorte and judged the annual farm competitions held in that locality.

FARM BUILDINGS, ETC.

Mr. D. O. Bruhn, of Saddleworth, was visited by the Field Engineer (Mr. J. Paull) and advice given concerning the best method of laying down a water supply for the household and stock requirements. The Field Engineer also reports that good progress is being made with the erection of the concrete silo at the Bedford Park Sanatorium. Numerous correspondents have been supplied with advice concerning the construction of farm buildings.

HORTICULTURE, ETC.

Mr. Geo. Quinn (Horticultural Instructor) paid a visit to the Glossop Soldier Settlement area, when a demonstration of summer pruning was given. In the evening a meeting was held under the auspices of the local Branch of the Bureau, and Mr. Quinn addressed the members on "The Possibilities of Export." A pruning demonstration and lecture was also given before the members of the Berri Branch. In company with the local horticultural officer at Renmark an orchard affected with the black spot was visited and inspected. A trip was also made to the newly opened Block E, Soldiers' Settlement, suburban orchards, vineyards, and gardens, and properties in the vicinity of the McLaren Flat were visited, and on behalf of the Soldiers' Settlement Department a vineyard proposition at Marion was inspected.

On November 15th Mr. C. H. Beaumont (Orchard Instructor and Inspector) attended a meeting of the Blackwood Bureau and delivered a lecture, "Orchard Practice and Some Common Errors." The Mypolonga Branch was visited on November 17th, and a demonstration of summer orchard work was given to a large number of visitors. In the evening the officer addressed the members on the subject, "Fruit Drying, Open Air and Evaporators."

Poultry.

The Poultry Expert (Mr. D. F. Laurie) paid a visit to Kapunda and inspected and advised numerous farmers concerning the management of their poultry. The Pinnaroo district was also visited and several farmers were supplied with information regarding the establishment of poultry plants. Mr. Laurie reports that at the present time a keen interest in poultry matters is being shown by several progressive settlers in the district.

Dairying.

At the invitation of the Milk Producers' Association, the Dairy Assistant (Mr. H. J. Apps) journeyed to Mount Pleasant and inspected Mr. R. T. Melrose's "Rosebank" dairy herd. The Murray Bridge Herd Testing Association was also visited, and on November 17th a lecture was given before the members of the Pompoota Bureau on "Cleanliness in Handling Products of the Dairy." An address was also given before a large gathering of members of the Lyndoch Branch on November 20th, the subject being "Cattle Breeding."

General.

The Acting Secretary of the Advisory Board (Mr. H. J. Finnis) was present at the opening of the Branches of the Agricultural Bureau at Black Springs and Williamstown, and delivered addresses on "The Aims and Objects of the Agricultural Bureau." In company with the members of the Advisory Board the Secretary also visited the Roseworthy Agricultural College and the Booborowie Experimental Farm.

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MANURES IN THEIR RELATION TO PRESENT DAY SOUTH AUSTRALIAN FARMING.

By Arthur J. Perkins, Director of Agriculture.

(*Continued from page* 297.)

Nitrogenous Manures.

But, phosphatic manures, although from our point of view by far the most important, are not the only type of manure likely to lead to improved cropping results. In some countries, particularly for wheat, the nitrogenous manures, such as nitrate of soda and sulphate of ammonia, are of even greater importance. Nevertheless, neither of these manures has made any headway among farmers of this State, and a general survey of such results as have been secured here experimentally, would lead to the conclusion that fortunately our soils appear to offer no pressing present need of them. I say " fortunately " in view of their high price, both actual and pre-war. Prior to the war both nitrate of soda and sulphate of ammonia were distributed at the rate of £14 a ton. To-day, they cannot be secured under £25 to £28 a ton. These figures must, from the point of view of farming, be considered as more or less prohibitive.

On the subject of nitrogenous manures we have less local data available than could perhaps be wished for. Such as they are, they admit of being summarised briefly as follows :—

At Roseworthy, over a period of 15 years, a dressing of 1cwt. of nitrate of soda combined with 2cwt. of superphosphate shows a mean improvement in yield of 2⅓bush. above a dressing of 2cwt. of superphosphate alone. At pre-war prices the nitrate of soda used was worth 14s. a cwt., and at present prices 28s., *i.e.*, in both cases the manure cost more than the value of the increase unless wheat was respectively 6s. and 12s. a bushel.

At Booborowie, over a period of four years, a dressing of ½cwt. of nitrate of soda combined with 2cwts. of superphosphate, gave an improvement in yield of 1⅓bush. above 2cwts. of superphosphate alone. Again, relatively to pre-war and present prices of manures, this increase is not profit-bearing except with wheat at 6s. and 12s. respectively.

Finally, at Wilkawatt, the improvement in yield from the use of ½cwt. of nitrate of soda over a period of four years, is equivalent to 1¾bush., which again is not a profit-bearing increase.

Why is it that nitrogenous manures so essential to heavy crops in some countries are comparatively ineffective with us? The answer which always has been given, and which I believe always will be given to this question, is, that it is all a matter of climate and varying farming practice. It is not that with us, wheat plants are not equally in need of nitrogen. They may indeed be said to be greedy of it, particularly in their early stages of development; but whilst in most cases we are able to provide them adequately with nitrates ready made in the soil, differently situated countries are compelled both by climate and general practice to supply nitrates artificially in the form of expensive nitrogenous manures. Our land values are relatively low and the mean areas of our farms relatively extensive, and we are able in consequence to devote 10 months to the preparation of land which is to receive wheat. Possibly our climatic conditions more or less compel us thereto. But whatever may be the cause or causes, this 10 months of careful cultivation is, in effect, equivalent to a heavy dressing of nitrate of soda. Efficiently tilled bare fallow is maintained throughout these 10 months in just that condition of moisture and warmth which leads to an abundant formation of natural nitrates through the action of soil bacteria. And finally, we have rarely, if ever, those prolonged rains which in moister countries lead to the leaching of nitrates beyond the reach of the roots of young plants. When, ultimately, rains do come fairly persistently during the winter months, the average winter growth of well established crops continues sufficiently strong to prevent the wasting of what nitrates may pass away into the subsoil waters. And it is because these conditions do not obtain in some countries that they are compelled to remedy the position artificially and in costly fashion. Their crops follow one on the other without intermission; no time is given for nitrate development; indeed, even were it otherwise, heavy rains would rapidly leach the nitrates from the bare soil; and as a matter of fact, even when the land is under crop, this is actually the fate of such nitrates as may have been formed in autumn, because low winter temperatures check all growth and the power of roots to hold nitrates temporarily disappears. Hence on the return of spring and warm weather the moisture-sodden ground must be top-dressed with nitrate of soda, and as Lawes and Gilbert have shown, final yields are generally in proportion to the generosity of this spring top-dressing.

I do not wish to imply that in no circumstances are we likely to benefit from the use of soluble nitrogenous manures in South Australia; as a matter of general practice, perhaps, it cannot be recommended, but there are circumstances which alter cases. When, for instance, the winter season has been exceptionally wet, and when crops show yellow and unhealthy, particularly on lighter types of land, ½cwt. of nitrate of soda, or even of sulphate of ammonia, lightly top-dressed over the crop, and followed perhaps by light harrows, will frequently work wonders, and can be recommended so soon as pre-war prices are resumed.

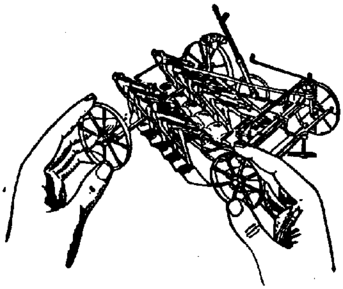
NITRATES IN COMBINATION WITH HEAVIER PHOSPHATIC DRESSINGS.

Before passing on to another subject I would like to refer briefly to one other aspect of the question before us, which is well illustrated in the results of the Roseworthy nitrate plots, summarised below in Table IV.

TABLE IV.—*Showing Mean Increases of Roseworthy Nitrate of Soda Plots over Plots Treated with 2cwt. of Superphosphate only.*

Manuring.	2cwts. Superphosphate and Nitrate of Soda.			3cwts. Superphosphate and 1cwt. Nitrate of Soda.
	¼cwt.	½cwt.	1cwt.	
Increase above 2cwts. Superphosphate plots	0·15bush.	0·92bush.	2·30bush.	3·48bush.
Cost of extra manure—				
Pre-war	3/6	7/-	14/-	18/3
Present	7/-	14/-	28/-	34/2
Value of increase with wheat at 4/- ..	7d.	3/8	9/2	13/11
5/- ..	9d.	4/7	11/6	17/5
6/- ..	11d.	5/6	13/10	20/11
7/- ..	1/1	6/5	16/1	24/4
8/- ..	1/2	7/4	18/9	27/10
9/- ..	1/4	8/3	20/8	31/4
10/- ..	1/6	9/2	23/-	34/10

In the above table are shown mean increases extending over a number of years above crops treated with 2cwt. superphosphate only, from crops treated with 2cwt. superphosphate and ¼cwt., ½cwt., and 1cwt. of nitrate of soda respectively on the one hand, and crops treated with 3cwt. of superphosphate and 1cwt. of nitrate of soda on the other. What I wish mainly to draw attention to here is the relatively higher increase than might otherwise have been expected from the use of an additional hundredweight of superphosphate in conjunction with 1cwt. of nitrate of soda. This increase is sufficiently high to be profit-bearing at pre-war prices with wheat at 6s. and at present prices with wheat at 10s. It is possible, therefore, that we may find in the course of time that nitrate dressings, the results from which are more or less doubtful with low phosphatic dressings, may in certain circumstances prove profit-bearing when heavier phosphatic dressings are availed of. The explanation probably is that, in the main, crop growth is probably proportional to the available minerals it finds at its disposal; that these minerals are absorbed in certain fixed proportions; that lighter dressings of phosphatic manures bear reasonable proportion to the natural nitrates already present in the soil; but that if to the natural nitrates we add an artificial dressing of nitrate of soda the latter will remain more or less unprofitable unless we increase proportionately our phosphatic dressings. This is a feature in manuring which will bear watching in the future, particularly if wheat prices continue at a high level.



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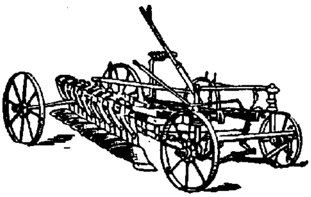

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POTASSIC MANURES.

The local possibilities of potassic manures do not yet admit of dogmatic settlement. We cannot be said to have had time to test either their profitableness or even their ability to produce crop increases of any kind. In pre-war days sources of supply were to all intents and purposes monopolised by a single nation, and that nation was not slow by a very vigorous and very able propaganda to keep the alleged claims of these manures constantly before the public eye. They made, nevertheless, but little progress in our midst. To-day, however, we see the potash supplies of the world divided between two nations; and from the fierce commercial competition which is certain to follow we may anticipate some improvement in prices from the standpoint of users. Unfortunately, during war-time potassic manures were practically unobtainable in this State. Hence local experiments bearing upon them, which we had in hand, were compulsorily suspended. Nor from the point of view of users is the position much more satisfactory to-day. The sulphate is still unobtainable, and with the muriate at £28 a ton it is only in exceptional cases that profitable use of potassic manures can be anticipated.

I have already stated that in the past these manures have made but little headway with South Australian farmers; they have, on the other hand, had perhaps a greater success in some districts with fruitgrowers, potato growers, market gardeners, &c. This is comprehensible enough, since given reasonably adequate soil supplies potassic manures have always shown themselves more effective with these types of plants than with cereal crops. As a matter of fact, from what we know analytically of our heavier types of soils, there is little or no reason to believe that potassic manures are likely to prove profitable for general cropping. In common with similar soils in other semi-arid countries, our own heavy and loamy soils are generally very heavily stocked with potash. Whether, however, this potash is always in readily available form is, of course, quite another matter; but even when this is not so, in present circumstances and at present prices, it will prove infinitely cheaper to unlock the potash salts present in the soil by heavy dressings of gypsum rather than face the present exorbitant prices of potassic manures.

As to such experiments as have been conducted locally, it may be observed that within recent years the Roseworthy ½cwt. dressings appear to have given appreciable crop increases. To what extent the latter are profit-bearing depends entirely on the current price of the manure. At Booborowie, on the other hand, similar dressings have been more or less resultless. At Wilkawatt our experimental plots are placed on light sandy soil, from which some response to potassic dressings was anticipated. And indeed, before war conditions had exhausted local stocks of manure, we did secure some positive evidence in that direction. These tests which for the time were perforce abandoned, will be resumed at an early date. In the meanwhile our earlier results covered far too limited a period of time to enable me to comment on them with any degree of confidence.

Thus, then, to the extent that general farming in this State is concerned, it would be inadvisable without further investigation to pronounce definitely on the problematic value of potassic manures. Of this much, however, we may feel tolerably certain, that whatever their intrinsic merits, these manures have not the slightest chance of entering into common use until local prices have been brought down to pre-war levels. Potash is known to be essential to healthy plant growth. It is more or less intimately connected with the development of starchy substances; it is one of the characteristic prerequisites of leguminous plants; it is supposed to favor abundant fruiting as opposed to mere vegetative growth; it is said to strengthen straw growth and to check a tendency to lodging, &c. All this we know, but neither singly nor in the mass do these facts justify the use of potassic manures in soils which are known to be abundantly stocked with available potash. And this, as has already been stated, would appear to be the position of all our heavier types of soil. But all our soils are very far from being heavy; indeed, many very light soils, very poor soils, perhaps, are frequently brought under crop with results that are frequently far from satisfactory, once the virgin condition has been worked out. It may be that in the course of time we shall find that potassic manures in conjunction with nitrates, can be used with advantage on these types of soils, particularly so if a cheap, more or less impure potassic manure like kaynite, which was sold formerly in the neighborhood of £4 a ton, could again be placed on the market. The high percentage of common salt which it would bring with it would prove no difficulty on the light South-Eastern lands in connection with which it could probably be used with advantage.

Before quitting potassic manures, I find it necessary to refer to one aspect of the question that does not immediately concern general farming. The only potassic manure at present locally obtainable is muriate of potash, and efforts are being made to show that it is quite as good, if not better, than the formerly better known sulphate of potash. It may as well be stated that this is largely commercial propaganda and to be taken accordingly. No doubt in certain circumstances the muriate is quite as good as the sulphate of potash: perhaps from our point of view, in exceptional cases and for exceptional purposes, it may even prove the better of the two. For our normal requirements, however, and particularly for those special cases which with us appear to call for potassic manures, the sulphate, without question, is superior to the muriate, and the latter may even prove more hurtful than useful. I have in mind chiefly the application of potassic manures to fruit trees and shrubs under irrigation conditions. Let it not be forgotten that apart from its useful potash radicle, the muriate brings with it an element quite as dangerous to vegetation as common salt. In practice, a dressing of ½cwt.

of muriate of potash to the acre would be equivalent in one direction to a dressing of 40lbs. of common salt. And we know what danger this holds out to the irrigated lands of semi-arid regions. Almost without exception all our irrigated lands are more or less salt-impregnated ; our irrigation waters, too, bring their quota of salt to the land ; and the whole secret of successful irrigation management consists in these circumstances in how best to get rid of the salt and avoid its concentration in the surface layers. Would it be wise to add to our troubles by introducing a new disturbing element in guise of what would otherwise be a useful manure ? Personally, I think not ; and if the need of potassic manures is imperative under irrigation conditions, let us use sulphate if at all available.

LIME.

The fact that local farmers generally have been so uniformly successful in their use of superphosphate as a dressing for their crops, is indirect evidence that our soils have been tolerably well endowed with lime by Nature. Nevertheless, we know this favorable endowment not to have been universal. We still own vast tracts of land which lack lime, and to these, sooner or later, we must bring lime, if we have in view healthy plant growth and healthy livestock development. Apart from forming a very essential part of the structure of plants and animals, lime plays many useful roles in the development and maintenance of soil fertility. It sweetens soils and promotes healthy bacterial growth which is so essential to good crop returns ; it reacts on the stock of plant food in the soil and helps to render it available to plant roots ; it modifies favorably the mechanical condition of both heavy and light soils ; in brief, lime, indispensable to animal and plant growth alike, if insufficiently present in any soil, must be added thereto artificially. The bulk of our South-Eastern country is lacking in lime, and the same can be said of the Hills country, of Kangaroo Island, and of much of the southern portions of Eyre's Peninsula. No doubt additional scattered areas may be found in other localities, and in this connection it may be useful to note that strong sorrel growth can be taken as an infallible indication that the land is crying out for lime.

The soil of one of our experimental farms—Kybybolite—is very markedly deficient in lime, and during the past four years we have been able to demonstrate very clearly the advantages of liming freely. We recognise that in the interests both of cropping and grazing it is essential that every arable acre of the farm shall be periodically dressed with lime. I have frequent inquiries as to how best to handle lime, and I shall endeavor, therefore, to summarise the position briefly.

In the first place, it is perhaps as well to recall that lime is a substance constantly entering into solution in water, and passing, therefore, from the surface layers into the subsoil and thence into the general country drainage. This will serve to explain why soils of districts long exposed to heavy rainfall conditions are frequently very deficient in lime. Originally they may have been quite adequately stocked with lime, but a prolonged period of heavy rainfall has gradually succeeded in leaching it out of them. It follows, therefore, that one dressing of lime, however heavy, cannot be expected to continue permanently effective. According to the nature of the soil and the leaching powers of local rains it should be repeated every four or five years, or in exceptional circumstances up to every 10 years. Similarly, as in daily practice, lime is required to act on the surface layers even more than on the subsoil, and as in any case rains will in the course of time wash it down into the subsoil, lime should, in the first instance, be applied as a top-dressing, lightly harrowed in and not ploughed under. The whole practice of liming may be said to be based on these two principles.

If on any farm the whole arable area is known to be short of lime, then cropping operations should be so arranged as to permit of every arable acre being periodically and regularly limed. I can best illustrate this statement by indicating what is being done in this direction at Kybybolite on a 150-acre block, divided up into five fields and worked on the following rotation :—

1st year	Kale (grazed)
2nd year	Kale (grazed)
3rd year	Oats
4th year	Pease (limed)
5th year	Wheat

It will be observed that the land is limed regularly at the rate of 1 ton of agricultural lime to the acre every fifth year when it is brought under pease. This position has been chosen as the most convenient for the purpose in the rotation, and because of the added protection against sorrel, which it is likely to give to the wheat crop which closes the rotation. The oat stubbles are broken up in autumn as early as circumstances permit of, and immediately thereafter the land is dressed with lime, which is lightly harrowed in. The pea crop is not sown until early spring, thus giving winter rains ample time to bring about the thorough incorporation of the lime with the soil.

The above will serve to illustrate the kind of treatment I recommend for arable land which experience has shown to be lacking in lime. I recognise that liming is a more or less costly process, but, unfortunately, it is one which cannot very well be avoided, and which ultimately makes ample repayment for any cost which may be incurred. It has usually been customary to spread lime by hand from small heaps distributed regularly over the field. This practice is both costly and disagreeable, and can be superseded with advantage by mechanical lime-spreaders. The quantities of lime to be applied will vary chiefly with the nature of the soil under consideration. For light sandy open soils, light dressings not exceeding 10cwts. to the acre renewed at intervals of two to three years are recommended; for heavy retentive soils, on the other hand, dressings of 1 to 2 tons to the acre, at intervals of four to six years, are more suitable.

Hitherto, in what has been said, I have had burnt lime mainly in view. It is the most active form of lime that can be used, and always dependable. I do not wish to imply, however, that crushed limestone or carbonate of lime is not likely to prove equally effective. It is all a matter of cost and the degree of fineness to which the limestone has been reduced. In the first place, weight for weight, crushed carbonate of lime has only one-half of the effectiveness of quicklime, and it follows that it can be recommended as an adequate substitute only if used at double rates and purchased at not more than half the cost of quicklime per ton. Secondly, crushed carbonate of lime is of very little value unless reduced to an impalpable powder quite free from grittiness. If these two conditions are satisfied, crushed limestone or carbonate of lime can replace quicklime quite effectively, particularly in districts of heavy rainfall.

FARM YARD MANURE.

Lastly, I shall have a few words to say on farm yard manure. In it we have, I am afraid, a bulky cumbersome article, costly to handle and not very popular with the average farmer. Has it not been suggested, more in jest perhaps than in earnest, that it would be a good thing if it could be burnt out of hand ? But as this cannot be done, and as every farm has more or less of it, common sense suggests that we should endeavor to determine how it can be turned to best advantage. I know quite well that as a direct manure for wheat, exception is often taken to it on the grounds that it leads to dirty weedy and more or less blighted crops ; and when used inadvisedly this objection cannot perhaps be denied. In this connection some experimental results from the use of farm yard manure on wheat crops at Roseworthy, Booborowie, and Turretfield will not be without interest. In each case the land in question is in alternate years under crop or treated as bare fallow, and the farm yard manure is buried in the course of ordinary fallowing operations. At Roseworthy the regular dressing adopted has been 14 tons to the acre, and at Booborowie and Turretfield 10 tons. These results have been summarised below in Table V.

TABLE V.—*Showing Mean Results of Farmyard Manure for Wheat in Comparison with 2cwts. Superphosphate and Unmanured Plots.*

	No Manure.	Farmyard Manure.	Farmyard Manure and 2cwts. Superphosphate.	Farmyard Manure, 2cwts. Superphosphate, and ½cwt. Sulphate of Potash.	2cwts. Superphosphate
	Bush.	Bush.	Bush.	Bush.	Bush.
Roseworthy, 1912-19	11·62	14·63	22·13	23·33	20·72
Booborowie, 1916-19	26·83	32·02	34·83	34·55	34·55
Turretfield, 1916-19	16·42	17·03	16·63	18·10	17·87
Means	18·29	21·23	24·53	25·33	24·38
Difference with no manure	—	2·94	6·24	7·04	6·09

If the cost of handling and spreading farmyard manure be taken into consideration, an increase of 3bush. per acre above no manure is probably not a paying proposition; and the increase of 6¼bush., which is the result of combining superphosphate with farmyard manure, is not very much better than the increase for which an equivalent dressing of superphosphate alone was responsible. Briefly, these tests, in so far as they go, do not show farmyard manure in a very profitable light as a direct manure for wheat. Nevertheless, I must confess to having faith in it to this extent that since we cannot escape handling it, if we can put it to no better use, we should spread it over our land with the object of making good the loss of organic matter for which our practice of continuous bare fallowing is increasingly responsible.

But as a matter of practice under our average special conditions, I much prefer farmyard manure as an indirect manure to wheat rather than as a direct one. Thus, if it were my practice to grow a summer fallow crop, such as sorghum, on portion of my fallow, then I would see to it that that particular portion was liberally dressed with farmyard manure. If I grew root crops, such as turnips, mangolds, kale &c., it is these crops that would receive what farmyard manure was available; and the same may be said of a crop of peas or beans, or even an ordinary cereal ensilage crop. In fact, all crops calling more or less for luxuriance or rankness of growth would be supplied with what farmyard manure was available. Later on wheat crops would benefit from these dressings, if any benefit there be, when in due course they came to occupy the same land and to draw on the residual effects of the farmyard manure.

CONCLUSION.

I am afraid that I have touched on manures to the extent that they appear to me to bear on present local farming conditions in rather summary fashion. My excuse is, of course, that the time that I could consider at my disposal and your patience did not admit of any other course. May I, in this connection, draw attention to the great advantages of these continuous manure plots of ours, scattered over different portions of the State. In the first place as the results of successive seasons accumulate, and as the disturbing factor of individual seasonal difference is gradually eliminated, we get before us a true picture of the effects of certain practices in the districts concerned. And subsequently, if we take the mean results of all the districts and average them out we are able to grasp what these practices mean in the aggregate to the State, as a whole. I am, of course, painfully aware of the present inadequacy of some of the data laid before you. Roseworthy alone can claim to have results covering a sufficient number of seasons to warrant safe generalisation. With the assistance of willing farmers, however, and with our own best efforts, we trust in the course of time to make good what to-day are regrettable but unavoidable gaps in our requirements.

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This farm is situated 172 miles north of Adelaide, on the railway to Wilmington, and consists of the homestead of the Willowie sheep run, in the hundred of Gregory, and some rough "hill" country in the hundred of Wongyarra. The Willowie Pastoral Company's estate was secured by the Government for the settling of returned soldiers on farms, and of this estate about 2,056 acres of "plain" land surrounding the homestead, and about 2,316 acres of fairly rough "hill" land, were set aside as a training farm for returned soldiers on August 1st, 1916.

THE SEASON, 1919.

The season was not only a comparatively "dry" one, but it proved peculiar both in the distribution of the rain and in the low total of the "useful" rainfall. Of a total rainfall of 14.13in., 5.76in. fell in February and December, which was not directly useful to the cereal crops, and from the beginning of the seeding period—April, to when growth has ceased, end of November—only 8.34in. were registered. The table below gives the monthly falls of rain registered since the end of 1916, and for this year:—

Distribution of Rainfall, Mount Remarkable, 1917-1919.

	1917.	1918.	1919.	Means. 1917-1919.
	In.	In.	In.	In.
January	3.46	1.38	0.03	1.63
February	0.84	0.13	2.34	1.10
March	1.00	0.97	—	0.66
April	0.19	0.70	1.30	0.73
May	3.30	1.76	0.71	1.92
June	3.02	1.59	1.01	1.87
July	4.29	1.84	0.73	2.29
August	4.07	4.68	1.02	3.26
September	2.42	0.51	2.00	1.64
October	1.85	1.05	0.90	1.27
November	0.38	0.13	0.67	0.39
December	0.83	0.04	3.42	1.43
Total rainfall	25.65	14.78	14.13	18.19
"Useful" rainfall (April-November)	19.52	12.26	8.34	13.37

The above table shows very clearly how low and how erratic the rainfall was in comparison with the previous two seasons, only one of which at all approached being a "wet" year. Although 1918 only received 0.65 of an inch more total rain than did 1919, still it gave practically 4in. more "useful" rain. The next table, where the distribution of the "useful" rainfall is set out in periods, shows what a poor year as regards rainfall 1919 proved to be:—

Distribution of "Useful" Rainfall, Mount Remarkable, 1917-1919.

	1919. In.	Means. 1917-1919. In.
Seeding rains (April-May)	2.01	2.65
Winter rains (June-July)	1.74	4.16
Spring rains (August-October)	3.92	6.17
Early summer rains (November)	0.67	0.39
Total "useful" rain	8.34	13.37

Crops.

Over 700 acres were seeded this year, of which about 400 acres were put in with wheat, 180 acres with oats, 40 with barley, 70 with peas, and 18 with lucerne. Of these crops, the oats, barley, and peas were sown on stubble land, which was cultivated only a short time before seeding.

Ensilage Crops.—No crop was grown solely for ensilage, the intention being to cut for this purpose any rank patches which might occur in any of the cereal crops. Eventually 21½ acres of wheat was cut from Field 19, and produced 130 tons of manufactured ensilage, which, if an allowance of 20 per cent. is made for loss in making, averaged 7 tons. 11cwts. 18lbs. of green stuff per acre. The table below sets out the returns of green forage cut for ensilage for the past two seasons:—

Yields of Green Forage for Ensilage—Mount Remarkable, 1918-1919.

Year.	Total Rainfall.	"Useful" Rainfall.	Area.	Total Yield.			Yield per Acre.		
	In.	In.	Acres.	T.	C.	L.	T.	C.	L.
1918	14.78	12.26	19.5	187	10	0	9	12	34
1919	14.13	8.34	21.5	162	10	0	7	11	18
Means	14.45	10.30	—		—		8	11	82

Hay Crops.—The bulk of the hay cut was secured from wheat crops grown on fallowed land, the remainder being from oats grown on stubble land.

Field No. 19 was ploughed between July 2nd and 10th, cultivated in September, December, March, and in front of drill; harrowed in the middle of February; rolled in early April; and between April 21st and 24th King's White wheat at 90lbs. seed per acre, and Huguenot wheat at 120lbs. seed per acre, were drilled in with 1cwt. superphosphate to the acre, and again harrowed.

Fields Nos. 20 and 21 were fallowed between July 11th and September 10th, cultivated in September, November, February, and in front of drill, harrowed in front of drill, and between April 26th and May 8th 60lbs. of Queen Fan wheat was drilled in with 1cwt. superphosphate to the acre, and the whole block was again harrowed.

Field No. 22 carried a wheaten hay crop in 1918, was disc-cultivated up between February 17th and 24th, cultivated, rolled, cultivated, and harrowed, and between April 16th and 19th was seeded with Algerian oats at 80lbs. seed per acre from one side, and Sunrise oats with the same seeding from the other, with 1cwt. superphosphate per acre, and the whole again harrowed.

The yields of hay secured from these above crops are set out below:—

Hay Yields, Mount Remarkable, 1919.

Hay.	Field Grown.	Area.	Total Yield.			Yield per Acre.		
		Acres.	T.	C.	L.	T.	C.	L.
Queen Fan Wheat	Nos. 20 and 21	108.0	235	4	84	2	3	63
King's White and Huguenot Wheat	No. 19	36.5	52	0	0	1	8	55
Algerian and Sunrise Oats	No. 22	66.0	51	19	56	0	15	84
Farm average	—	210.5	339	4	28	1	12	26

This average yield of over 1½ tons of hay per acre is really good for the season, and from the fallowed land the return was practically 2 tons per acre—a most satisfactory crop, again illustrating the advantage of well-worked fallowed land in dry years.

The hay returns secured since the commencement of the farm are detailed below:—

Hay Returns, Mount Remarkable, 1917-1919.

Year.	Total Rainfall.	"Useful" Rainfall.	Area.	Total Yield.			Yield per Acre.		
	In.	In.	Acres	T.	C.	L.	T.	C.	L.
1917	25.65	19.52	107.00	272	0	0	2	10	94
1918	14.78	12.26	194.00	630	10	0	3	5	0
1919	14.13	8.34	210.50	339	4	28	1	12	26
Means	18.19	13.37	—		—		2	9	40

Oat Crops.—The cutting of all of the oats in Field No. 22 for hay only left the crop in Field No. 1 for grain. This field carried a wheat crop in 1918, was ploughed between April 14th and May 8th, harrowed, and between May 8th and 12th 31½ acres were seeded with 80lbs. Sunrise oats and 1cwt. superphosphate to the acre, and was then harrowed. This crop when harvested produced 330bush. 30lbs., for an average return of 10bush. 20lbs. of grain per acre, which is a very low return for an oat crop, but considering the lateness of the soil preparation and the seeding, it is rather remarkable that the crop did so well in such a dry season.

The next table shows the yields obtained from oat crops at Mount Remarkable in the past two seasons, and the mean is only about 12bush. per acre, but considering that all of the crops have been grown on stubble land, and in two comparatively "dry" years, it by no means shows the crop as being unsuitable to the district:—

Oat Returns, Mount Remarkable, 1918-1919.

Year.	Total Rainfall. In.	"Useful" Rainfall. In.	Area. Acres.	Total Yield. Bush.	Total Yield. lbs.	Yield per Acre. Bush.	Yield per Acre. lbs.
1918	14.78	12.26	70.0	918	10	13	5
1919	14.13	8.34	31.5	330	30	10	20
Means	14.45	10.30	—	—		11	32

Barley Crops.—Although the intention was to sow quite a considerable area of barley on stubble land this year, the difficulty of preparing the land owing to the way it set down prevented doing any more than the block of about 40 acres in Field No. 1. The land was ploughed between April 14th and May 8th, harrowed, seeded with 66lbs. of Short Head barley and 1cwt. superphosphate to the acre between May 8th and 12th, and was again harrowed. The 39 acres harvested for grain produced 512bush. 23lbs., for an average yield of 13bush. 7lbs. per acre.

The next table shows the behavior of six-rowed barley at the farm, for the past two years, when despite the low yield this year, the crop has averaged 22bush. 16lbs. per acre:—

Barley Returns—Mount Remarkable, 1918-1919.

Year.	Total Rainfall. In.	"Useful" Rainfall. In.	Area. Acres.	Total Yield. Bush.	Total Yield. lbs.	Yield per Acre. Bush.	Yield per Acre. lbs.
1918	14.78	12.26	50.0	1,575	0	31	25
1919	14.13	8.34	39.0	512	23	13	7
Means	14.45	10.30	—	—		22	16

Wheat Crops.—The varieties of wheats tried this season were grown in two blocks, both of which were fallowed, and all told 235½ acres were harvested for grain. Fields 6, 7, and 8 were ploughed between August 8th and September 12th, 1918, cultivated in March and before drilling, harrowed in September, February, and before and after the drill, and the wheat varieties were drilled in between May 14th and 28th with 1cwt. superphosphate to the acre. Field No. 2 was ploughed between July 27th and August 12th, 1918, cultivated in September twice, in March, and in front of drill, harrowed before and after the drill, and

AGRICULTURISTS

CAN SECURE

TECHNICAL ADVICE

ON

FARM BUILDINGS,
SILOS,
TANKS,
SHEEP DIPS,
REINFORCED CONCRETE GENERALLY,

TOGETHER WITH

PLANS AND SPECIFICATIONS,

AND ASSISTANCE AND SUPERVISION
IN CONSTRUCTION,

ON APPLICATION TO THE

DEPARTMENT OF AGRICULTURE,

ADELAIDE.

varieties were seeded on May 12th and 13th with 1cwt. superphosphate to the acre.

Wheat Variety Yields—Mount Remarkable, 1919.

Variety.	Field Grown.	Area. Acres.	Total Yield. Bush.	lbs.	Yield per Acre. Bush.	lbs.
Caliph	Nos. 6, 7, & 8	21.0	551	57	26	17
Onas	Nos. 6, 7, & 8	27.0	608	51	22	33
Yandilla King..	Nos. 6, 7, & 8	27.0	605	42	22	26
King's White	Nos. 6, 7, & 8	27.0	585	0	21	40
Late Gluyas	Nos. 6, 7, & 8	27.0	540	0	20	0
Queen Fan	Nos. 6, 7, & 8	22.0	431	56	19	38
Marshall's No. 3	Nos. 6, 7, & 8	29.0	542	47	18	43
Dart's Imperial	No. 2	10.0	186	34	18	39
Leak's Rust Proof ..	No. 2	5.0	74	2	14	48
Le Huguenot	No. 2	12.0	154	10	12	51
Mixture..	Nos. 6, 7, & 8	28.5	314	55	11	3
Farm average ..	—	235.5	4,595	54	19	31

The return secured—19bush. 31lbs. per acre—is highly satisfactory for such a year, and speaks volumes for the fertility of the land of the farm and the value of bare fallow. Of the varieties, those yielding 20bush. or over per acre are Caliph—a Roseworthy College wheat which is yielding consistently well in most of the wheat-growing portions of the State, particularly in the better limestone districts; Onas—a half-bred Federation, originated by Mr. F. Coleman, of Saddleworth, which is proving a good grain producer in the good wheat soils of the Northern districts; Yandilla King—well and favorably known in most of South Australia as the hardiest of the "later" types of wheats; King's White—a very early bearded wheat, selected from King's Early at Roseworthy College, and very largely grown in the "earlier" wheat districts; Late Gluyas—a Roseworthy College wheat, which, despite its name, is an "early" variety, and which stands up very much better than its parent, Gluyas.

The next table sets out in detail the wheat returns obtained at the farm since 1917, with the mean yield for the period 1917-1919:—

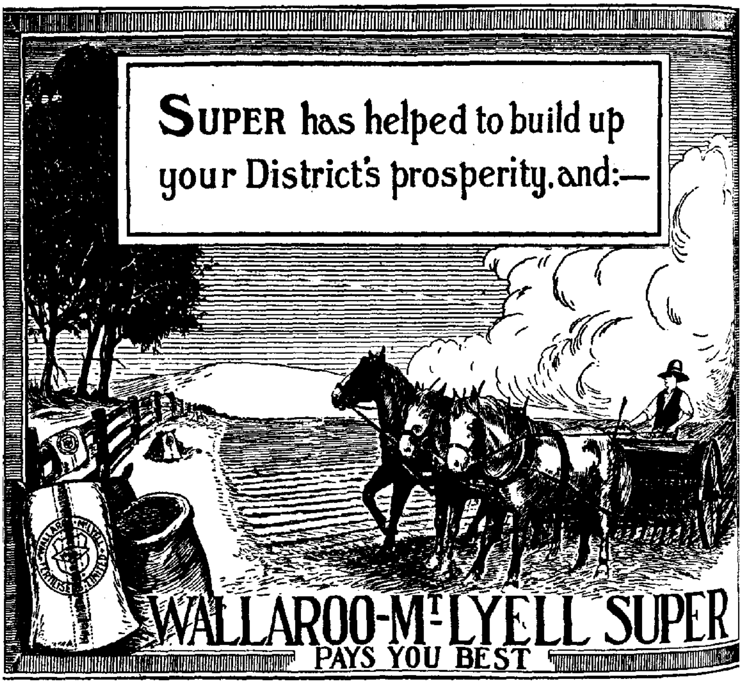
Wheat Returns, Mount Remarkable, 1917-1919.

Year.	Total Rainfall. In.	"Useful" Rainfall. In.	Area. Acres.	Total Yield. Bush.	lbs.	Yield per Acre. Bush.	lbs.
1917	25.65	19.52	366.50	7,989	0	21	48
1918	14.78	12.26	342.00	8,917	30	26	4
1919	14.13	8.34	235.50	4,595	54	19	31
Means	18.19	13.37	—	—		22	28

Other Crops.—Besides the crops shown above, Field No. 24, about 82 acres in area, was cultivated up and seeded with Algerian oats for green feed, and although the dryness of the season rather prevented heavy growth, this field carried sheep at the rate of 2.6 per acre per year.

Field No. 25, about 71 acres in extent, after having carried a crop of barley in 1918, was ploughed up, and sown with Early Dun field peas. The crop made extremely good growth in its early stages, but the continued dry weather was too much for it, and instead of maturing, it just dried off. Full feeding results could not be kept for this field, owing to the well supplying water to it giving out, but even then the stock carried equalled 1.3 sheep per acre per year.

Field No. 28, about 18 acres in area, was ploughed and subsoiled during July and early August, 1918, and kept worked as bare fallow during the year, and on May 8th and 9th Hunter River lucerne seed was sown at the rate of 18½lbs. per acre after 2cwts. superphosphate per acre had been drilled in. Three separate germinations of seed took place with this crop, owing to the lightness of the rains, and unfortunately most of the plants of the first two batches had dried up before the land was sufficiently moist for them to get sufficient hold, with the result that the crop is much thinner than it should be. This has now been corrected by reseeding the thin portions.


SUPER has helped to build up your District's prosperity, and:—
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PAYS YOU BEST

ADVISORY BOARD OF AGRICULTURE.

The monthly meeting of the Advisory Board was held on Tuesday, November 9th, there being present Mr. C. J. Tuckwell (Chairman), the Hon. the Minister of Agriculture (Hon. T. Pascoe), the Director of Agriculture (Professor Arthur J. Perkins), Captain S. A. White, Messrs. F. Coleman, T. H. Williams, and W. S. Kelly, and H. J. Finnis (Acting Secretary). Apologies were received from Messrs. W. J. Colebatch, Geo. Jeffrey, and A. M. Dawkins.

Removal of Kangaroos from List of Protected Animals.—A communication from the Netherton Branch asking that the restriction placed on the destruction of kangaroos might be removed for that part of the State, on account of the damage the animals were doing to the crop, was reported on by the Chief Inspector of Fisheries and Game as follows:—"I have carefully inquired into this matter, but cannot recommend the removal of the partial protection now given to kangaroos. Ample provision is made in the Act for killing animals on cultivated lands for the protection of crops, but this does not satisfy some land holders, because any skins taken during close season cannot be sold." The Minister of Industry intimated that, in view of that report, he was unable to recommend the granting of the request of the Netherton Branch. The Secretary was instructed to notify the Branch of the decision of the Minister.

Allotment of Land for Returned Soldiers.—At the recent Annual Bureau Congress the following resolution was carried—"That the attention of the Government be directed to the urgent need for allotting swamp lands for the settlement of returned soldiers." The Minister of Agriculture, to whom this matter was referred, intimated that the Government were fully aware of this need, and advertised the blocks for allotment so soon as they were ready.

Congress Resolutions.—Resolutions from the 31st Annual Congress, requesting that a referendum of farmers should be taken on the question of bulk handling of wheat, and the suggestion that farmers be paid world parity for the whole wheat crop, which had been transmitted to the Minister of Agriculture, were received in return. Information was also received that the resolution requesting the reduction on the tariff on wire netting, &c., had been transmitted to the Prime Minister. A resolution asking that the Government be asked to find suitable paddocking for young stock from the Government reclaimed swamp areas from the age of six months to two years was forwarded to the Minister of Agriculture. The Minister, in reply, stated that proposals had already been submitted to settlers on the reclamation swamps in the direction indicated. It was decided to inform the Murray Bridge Branch accordingly.

Investigation of Deaths of Stock.—At the recent Conference of Murray Lands Branches of the Agricultural Bureau it was resolved—"That the Chief Inspector of Stock be instructed to investigate all deaths of stock reported from other than natural causes." The resolution was transmitted to the Chief Inspector of Stock, who has supplied the following report:—"The meaning of this resolution is not clear, but I presume it is meant that all deaths from obscure causes should be investigated. South Australia is a large area, and to demand that all deaths of stock be investigated is a large and expensive order. There are only 10 field officers attached to the Stock Department, therefore it would be quite out of the question to expect them to attempt such a thing. If reports of deaths from obscure causes are promptly made to the Chief Inspector of Stock every effort will be made to investigate and elucidate such deaths, provided they are within reasonable reach and officers are available." The Secretary was instructed to transmit a copy of the report to the Wynarka Branch.

The Murray Lands Conference also decided—"That the Government be asked to provide roads for the settlers in mallee districts." In replying to this request the Secretary for Lands stated:—"Before this matter can be dealt with it will be necessary to know what roads are referred to. The area surrounding Karoonda is not within a district council district, but with this exception the mallee lands are within district council districts. If the resolution refers only to the roads in the vicinity of Karoonda it would be a matter for the Public Works Department to deal with, but if the resolution refers to roads in other mallee areas, which are within district council districts, the matter can be taken up by the Local Government Department." In view of the above report the Secretary was instructed to obtain further information from the Branches interested in the matter.

Bonus for Combating Take-all.—A communication was received from the Yadnarie Branch asking that the Advisory Board be asked to urge the Government to offer a bonus for an effective method of combating the take-all pest. The Board decided that it could not support the suggestion. The Secretary was instructed to forward a copy of the bulletin issued by the Department on "Wheat Diseases and their Treatment" to the Branch.

On the motion of Mr. W. S. Kelly, seconded by Captain S. A. White, it was resolved—"That the Advisory Board place on record its appreciation of the services rendered to the agricultural interests of this State by Mr. C. J. Matthews during his connection with the *Register.*"

The Minister of Agriculture (Hon. T. Pascoe, M.L.C.) attended the meeting, addressed members, and discussed with them matters relating to the work of the Board.

Agenda Committee.—A committee consisting of the Director of Agriculture (Professor A. J. Perkins), the Acting Secretary (Mr. H. J. Finnis), and one unofficial member, to be elected each month, was appointed to consider matters submitted for inclusion in the agenda paper of the Advisory Board.

New Branches.—Approval was given for the formation of Branches of the Agricultral Bureau at Williamstown, Black Springs, and McLachlan, with the following gentlemen as foundation members:—Williamstown—D. Powell, A. Norsworthy, G. Brown, L. Hammatt, E. J. Howarth, F. E. Rix, R. S. Binning, J. Varley, J. H. Mitchell, J. J. Fry, A. W. Mitchell, W. Adams, J. S. Holmes, J. J. Bain, G. A. Leditschke; Black Springs—

J. and C. Hudd, J. Carter, W. and S. Burbidge, K. and H. Dunn, H., R., and J. Turner, J. Garrid, H. Cowey; McLachlan—C. Ridgway, T. W. Puckridge, C. E. and H. W. Klopper, C. H. Smith, T., G., and C. Bailey, E. Cabot, E. A. Huppatz, E. G. Hetzel and Sons, J. E. Buzacott, C. Dawson, W. Attick, G. Owen and Sons, G. Roe, S. and W. Burrows, A. Enright, W. Hawke, H. and G. Burgess, P. Zerk and Sons.

Life Membership.—The names of Messrs. W. T. Cooper (Elbow Hill), W. Dow (Lucindale), and W. Penna (Petina) were added to the list of life members of the Agricultural Bureau.

New Members.—The following names were added to the rolls of existing Branches:—Port Elliot—T. G. Rose; Butler—R. L. Phills; Paskeville—J. Prorrse, T. Conaghty, G. H. Pontifex; Berri—J. B. Mincham; Meadows—F. Vickery; Two Wells—W. J. Pratt, A. E. Davis, H. D. Secomb, P. E. Rowe, M. P. Murphy; Naracoorte—C. J. S. Slinter, M. J. Malone; Mundalla—S. Stoddart, A. Packer, C. Fallon, B. Bourke, R. Hinge; Mount Pleasant—L. Harding, R. N. Hanna, L. McIntyre; Barmera—J. P. and R. V. Langdon, A. D. Smith, R. G. Wilton, A. H. Denison, J. W. Sabey, J. C. V. Martin, W Driscoll, J. J. Elliott, N. S. Fotheringham, R. P. Wheeler, A. E. Whitmore, J. Taylor, G. Burns, F. V. Burchell, W. Gerrard, G. Fraser, W. Germein, D. J. Leadbeater, J. G. Wilson, J. Wills, J. H. Datson, E. H. Schumaker, N. S. MacKenzie, T. Hoggart, G. C. Jackson, J. A. Gow, H. G. Heathersay, W. Heathersay, H. MacKenzie, C. E. Pullin, K. G. Allister, D. B. Wright, H. Weall, E. L. Braddock, D. W. B. Middleton, S. Vohr, R. Kernot; Strathalbyn—C. Ansell, W. Bermingham, R. Brytt, sen., A. L. Duncan, M. J. Manser; Renmark—W. Brison, T. Barrington, R. Bennett, J. Duggan, S. H. Nalty; Kilkerran—C. F. G. Heinrich, C. Heinrich, C. Obst; Lameroo—A. B. Burns; Monarto South—G. B. Kuchel; Moonta—L. T. Lodge; Petina—C. Daniel, G. Johnson; Hartley—G. S. Harvey; Morchard—H. Mills; Petina—C. D. Johnson; Warrow—R. W. Doudle, A. A. Puckridge, G. Harris; Port Germein—E. C. Alford; Waikerie—F. Milner, A. Morcom; Milang—D. M. Adam; Wirrabara, M. Peacock, T. Cockburn, jun., W. S. Shuttleworth; Pinnaroo—H. Ferguson, J. Davies; Berri—R. Downie, A. J. Strang, E. H. Roddo, C. H. Hunt, H. G. Scholz, J. C. Smith, G. V. Barrett; Yacka—J. W. Burford, C. Burford, R. Hill, W. Quinn, A. B. Goss, W. Gale, A. Gale; Mount Gambier—R. White, H. H. Orchard; Glossop—R. N. Fluris, W. J. Mawby, E. Donn, E. Bradshaw, E. C. Wood, C. Teasdale, L. G. Brown, W. J. Robertson, V. J. Robertson, W. J. Baskett, J. Mills, H. Brand; Barmera—R. A. Wamsley, A. King, G. Weir, L. R. Grubb, A. Ryan, C. Bruce, A. E. George, B. Gregory, C. L. Hains, M. H. Desmond; Parilla—F. H. Kerley; Moorak—J. Mahoney; Paskeville—R. Barton, W. L. McDonald, J. Prorrse; Kongorong—E. Smith; Hartley—W. T. Harvey; MacGillivray—W. Cook, W. Adams; Lone Gum—J. E. Brown, A. J. Smith; Gumeracha—R. Bennett, T. Stott; Mount Barker—C. A. C. Liebelt, J. Duffield, F. L. Saunders; Salisbury—E. Martin; Glencoe—D. McIntosh; Brinkley—A. M. Forrest, J. M. Humphrey; Meadows—W. Griggs, C. T. Harvey.

Grade Romney Marsh Flock Ewes on the Government Experimental Farm, Booborowie.

Circular Sheep Dip and Draining Pens on the Government Experimental Farm, Booborowie.

ORCHARD NOTES.

[By C. H. BEAUMONT, Orchard Instructor.]

SPRAYING FOR CODLIN MOTH DESTRUCTION.

The most important time for spraying to control the codlin moth is, of course, when the fruit is forming, but, by experience, we have found that numbers of moths are continually maturing, and growers of fruit must be prepared to prevent them from damaging what has taken so long, and has cost so much, to produce. It is, therefore, necessary to always keep a film of spray over the apples and pears. There is no spray so successful as arsenate of lead. Use 1lb. of the powder to 30 to 50galls. of water, the weaker strength as the fruit advances.

PEAR OR CHERRY SLUG.

If you are troubled with this pest, a similar spray is used, except that 1lb. of arsenate of lead powder to 50galls. of water will suffice.

CATERPILLARS ON VINES AND TREES.

To destroy cut-worms and other caterpillars amongst vine cuttings use a spray of 1lb. arsenate of lead to 8galls. to 12galls. of water. If the caterpillars are getting into the trees, put a band of stiff paper about 3in. wide on the stem, fasten with a tack, and rub some axle grease on the paper; this will stop the upward march.

CASES AND TRAYS.

These should be ready for soft stone fruits, and the trays for drying and other parts of the drying plant attended to.

YOUNG FRUIT TREES.

Keep the soil loose about these. Rub off or pinch back useless shoots, and keep them free from leaf-eating insects.

STRIPPING AFTER MILKING.

To allow a period of half an hour or so to elapse between the time of milking cows and stripping out is regarded as undesirable by the Dairy Expert (Mr. P. H. Suter). The question has been raised by a correspondent who intimates that he proposes using a two-unit milking machine and delaying the stripping until all the cows are milked, the approximate time between the stripping and milking being 30 minutes. Mr. Suter states that the practice would certainly not be desirable, for the gentle and continuous milking right out of a cow is attended with best results. Delays such as suggested would impair the secreting powers of a good cow. He suggests that the operator should, if he found that he could not keep pace stripping after the machine, arrange that the last cows to be milked should be those giving the most milk and the more recently calved animals, and those should be the first stripped.

PARAFIELD POULTRY STATION.

RESULT OF SEASON INCUBATION OF CHICKENS.

[By D. F. LAURIE, Poultry Expert.]

The attached report by my assistant, Mr. C. F. Anderson, is the first of a series to be published from time to time. The question of hatching chickens in large numbers is of vital importance to the poultry breeder. The mammoth incubator is by no means a novelty. Quite apart from the large Egyptian "mamals," with a capacity of hundreds of thousands of eggs, there have been during the last fifty years experimenters with machines of large capacity.

As the hen with an incubating capacity of, say, 15 eggs gave way to the incubator averaging, say, 100 eggs, so in large poultry plants the smaller individual incubators have been displaced by the more economical machines of large capacity.

The Parafield mammoth was built partly on an American model and partly to my own specification. The American portion proved unsatisfactory, and the machine was remodelled, and now gives satisfaction.

In future it is hoped that we shall be able to conduct experiments dealing with various factors in incubation. For the present the record is one of an ordinary hatching season, such as might be the case on any large poultry farm. It may be added that the resulting chickens are very fine and robust, and the rearing results are giving excellent promise.

REPORT ON SPRING HATCHING, SEASON 1920.

I have the honor to forward herewith results of the spring hatching for season 1920 with the "Mammoth" incubator only.

White Leghorn eggs only were set in the "Mammoth." These eggs were obtained from the breeding row, which for the purpose of this season's hatching contained 51 pens, each of 10 hens and a cockerel. Each one of the 510 hens has been single tested for size of egg, shape of egg, and general type of bird. Any birds laying eggs weighing under 2ozs. were rejected from the breeding-pens.

FEEDING.

The birds were fed as follows:—

Morning.—Mash made of ½oz. bran, 1oz. pollard per bird, to which was added meat meal at the rate of 1lb. per 100 birds, and 50 per cent. of finely chaffed lucerne. The bran was scalded over-night with meat meal soup, then the bran and meat meal was mixed with the lucerne and dried off with the pollard.

Midday.—As much chaffed lucerne as the birds would eat.

Night.—Wheat at the rate of 1½ozs. per bird per night.

The quantities of bran, pollard, and wheat fed have only been ascertained after carefully noting the amount of food the birds would eat, and also their condition. The birds at the end of the breeding season were in first-class condition. They were mated up on July 26th, the eggs were kept for setting from August 2nd, and the first section was started on August 6th. The "Mammoth" incubator contains 16 sections, each holding 540 eggs, equalling 8,640 eggs, but for convenience of working, after the first section was filled with 540 eggs, only 468 were put in each of the remaining sections.

It will be noticed by reference to Table A that the first section set No. 2, after the infertile, dead in the shell, and weak germs were taken out, contained the lowest percentage, 78.14, of any of the sections of eggs remaining in the incubator after testing, but yet registered the highest hatch of any section, namely, 81.2 per cent.

Table A reveals that the best hatch was section No. 2, 81.2 per cent., and the lowest hatch, section No. 7, 50.7 per cent. Table B shows that out of a total of 7,082 eggs remaining in the machine after testing, 4,802 chickens were hatched, or an average of 67.8 per cent. This, I think, is quite satisfactory, when it is realised the great saving there is in labor with a machine of this capacity, when it is only necessary to stoke the heater about three times a day, and when it would probably take a man two or three hours every day in attending to lamps in machines which would aggregate the same number of eggs as the one in question.

The cost of running the machine in fuel (coke) was 1s. 6d. every 24 hours, as against £1 3s. 2d. in kerosine for machines of a similar capacity for 24 hours. These figures are based on the amount of kerosine used by 140-egg "Cypher" incubator.

The moisture trays were put in every section the same day as the eggs were set. The eggs were turned twice daily after the third day.

TABLE A.—MAMMOTH INCUBATOR

Section No.	Date Set.	No. of Eggs.	Breed.	No. Eggs Infertile.	Per Cent. Infertile.	No. Dead in Shell and Weak Germs.	Per Cent. Dead in Shell and Weak Germs.	No. Eggs Remained After Testing.	Per Cent. Eggs Remained in After Testing.	No. Chickens Hatched.	Per Cent. Eggs Set, Hatched.	Per Cent. Eggs Hatched After Testing.
1	Sept. 7	468	White Leghorns	22	4·7	36	7·67	410	87·6	270	57·6	65·8
2	Aug. 6	540		62	11·48	56	10·37	422	78·14	343	63·5	81·2
2	Sept. 7	468	"	19	*4·06	33	*7·05	416	88·8	299	63·8	71·8
3	Aug. 8	468	"	35	7·47	34	7·26	399	85·2	310	66·23	77·6
4	Aug. 10	468	"	19	*4·05	42	8·99	407	86·9	294	62·8	72·2
5	Aug. 12	468	"	15	3·2	51	10·8	402	85·8	312	66·6	77·6
6	Aug. 16	468	"	24	5·12	41	8·7	403	86·1	261	55·7	64·7
7	Aug. 17	468	"	22	4·7	36	7·6	410	87·6	208	44·4	50·7*
8	Aug. 18	462	"	18	3·8	14	*3·03	430	*93·07	304	65·8	70·6
9	Aug. 21	468	"	29	6·1	11	2·3	428	91·4	280	59·8	65·4
10	Aug. 23	468	"	22	4·7	25	5·3	421	89·9	261	55·7	61·9
11	Aug. 25	468	"	17	3·6	26	5·5	425	90·8	276	58·9	64·9
12	Aug. 26	468	"	24	5·1	10	2·1	434	92·7	300	64·1	69·1
13	Aug. 30	468	"	22	4·7	30	6·4	416	88·8	280	59·8	67·3
14	Aug. 30	468	"	18	3·8	15	3·2	435	92·9	288	61·5	66·2
15	Sept. 3	468	"	30	6·4	35	7·4	403	86·1	220	47·0	54·5
16	Sept. 3	468	"	22	4·7	25	5·3	421	89·9	296	63·2	70·3

* Through failure to carry out orders on the part of the attendant the temperature in this section ran up to 107° on one occasion. This without doubt accounts for the poor hatch.

TABLE B.—SUMMARY.

No. Eggs Set.	No. Infertile.	Per Cent. Infertile.	No. Dead in Shell and Weak Germs.	Per Cent. Dead in Shells and Weak Germs.	No. Eggs Remained in Incubator After Testing.	Per Cent. Eggs Remained in Incubator After Testing.	No. Chickens Hatched.	Per Cent. Eggs Set, Hatched.	Per Cent. Eggs Hatched After Testing.
8,022	420	5·23	520	6·4	7,082	88·28	4,802	59·86	67·8

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EGG-LAYING COMPETITION, 1920-1921.

HELD AT THE PARAFIELD POULTRY STATION, PARAFIELD, UNDER THE DIRECTION OF D. F. LAURIE (GOVERNMENT POULTRY EXPERT AND LECTURER).

[Twelve Months' Test started on April 1st, 1920, and to terminate March 31st, 1921.]

ECTION 1.—LIGHT BREEDS (SINGLE TESTING). THREE PULLETS IN EACH ENTRY.

Name and Address.	Bird No.	Month ending 30/11/20.	Score to Date.	Bird No.	Month ending 30/11/20.	Score to Date.	Bird No.	Month ending 30/11/20.	Score to Date.
		White Leghorns.							
Bertelsmeier, O. B., Kensington	1	16	90	2	19	75	3	16	80
McDonnell, G., Auburn, Melbourne	4	15	74	5	22	89	6	Dead	
Stacey, R. S., Hamley Bridge	7	13	64	8	12	42	9	18	94
Ryan, J., Silvan, Victoria	10	11	80	11	12	113	12	18	84
Moritz Bros., Kalangadoo	13	23	126	14	Dead		15	20	124
Brown, J. P., Ballarat, Victoria	16	15	59	17	1	62	18	12	80
Rogers, A. H., Richmond, S.A.	19	13	44	20	8	60	21	19	81
Eckermann, W. P., Eudunda	22	18	89	23	12	77	24	15	66
Burton, C. J., Mallala	25	—*	—*	26	—*	—*	27	—*	—*
Beythien, E. W., Scott's Creek	28	14	41	29	8	39	30	12	48
Moritz Bros., Kalangadoo	31	17	81	32	19	100	33	20	115
James, H. B., Kew, Victoria	34	21	59	35	12	55	36	21	118
Monkhouse, A. J., Woodside	37	14	73	38	20	89	39	21	110
Crear, H. S., Broken Hill	40	—*	—*	41	14	94	42	21	80
Roantree, W., Broken Hill	43	—*	—*	44	—*	—*	45	14	42
Beythien, E. W., Scott's Creek	46	19	64	47	—*	—*	48	—*	—*
Hooking, E. D., Kadina South	49	—*	—*	50	19	65	51	21	72
Raymoor Poultry Farm, Kilkenny	52	13	46	53	19	75	54	—*	—*
Keegan, H. V., Wallaroo	55	—*	—*	56	11	49	57	—*	—*
Lampert, Mrs. S., Piccadilly	58	14	67	59	20	86	60	21	88
Parsons, E. H., Pinnaroo	61	22	87	62	6	33	63	11	56
Raymoor Poultry Farm, Kilkenny	64	20	97	65	23	97	66	22	76
Stevens, H. J., Broken Hill	1	18	91	2	18	86	3	19	90
Glenelg River Poultry Farm, Mt. Gambier	4	22	124	5	22	123	6	16	124
Willington, Mrs. G., Milang	7	21	80	8	20	66	9	20	82
Rutledge, M., Broken Hill	10	21	101	11	—*	—*	12	18	71
Vercoe, Wm., Sefton Park	13	22	88	14	20	109	15	—*	—*
Stockman, A., Goodwood	16	22	84	17	18	94	18	20	74
Ritter, Wm., Magill	19	21	84	20	16	81	21	20	87
Blake, Mrs. M., Berowra, N.S.W.	22	21	92	23	20	98	24	18	98
Stidston, M., Cheltenham	25	19	80	26	18	113	27	19	117
Bamford, W. H., Glenelg	28	18	101	29	20	128	30	18	109
Windyridge Poultry Farm, Blackwood	31	21	98	32	15	88	33	18	89
Howie, H. H., Mount Gambier	34	17	105	35	17	99	36	18	101
Green, A. J., Crystal Brook	37	20	113	38	18	135	39	15	66
Green, F. W. H., Monteith	40	21	126	41	17	110	42	21	107
Rivett, J., Lockleys	43	—	—	44	—	—	45	—	—
Small, E. W., Mount Gambier	46	16	67	47	17	78	48	18	69
Herbert, C., Alberton	49	20	84	50	16	73	51	20	116
Holmes, F. A., Naracoorte	52	19	71	53	20	68	54	15	78

* Failed under Regulation 12.

EGG-LAYING COMPETITION—*continued.*

Row No.	Name and Address.	Bird No.	Month ending 30/11/20.	Score to Date.	Bird No.	Month ending 30/11/20.	Score to Date.	Bird No.	Month ending 30/11/20.	Score to Date.
	WHITE LEGHORNS—*continued.*									
B	Green, F. W. H., Monteith	55	17	66	56	19	117	57	22	110
B	Herbert, C., Alberton	58	1	48	59	19	61	60	25	68
B	Urlwin, A. P., Balaklava	61	21	95	62	17	68	63	22	75
B	Purvis, W., Glanville Blocks	64	17	65	65	21	108	66	22	60
C	Green, F. W. H., Monteith	1	19	78	2	17	93	3	20	91
C	Holmes, F. A., Naracoorte	4	20	73	5	17	61	6	—*	—*
C	Axtell, Mrs. J., Glen Osmond	7	17	77	8	14	85	9	13	73
C	Finn, H. J., jun., Angaston	10	13	56	11	17	60	12	19	61
C	Coleman, A. C., Grange	13	10	59	14	21	101	15	17	66
C	Green, F. W. H., Monteith	16	23	124	17	19	117	18	19	103
C	Anderson, J., Prospect	19	—*	—*	20	—*	—*	21	9	52
C	Axtell. Mrs J., Glen Osmond	22	—*	—*	23	16	67	24	18	69
	TWO WHITE LEGHORNS, ONE ANCONA.									
C	Tester, Geo. P., Naracoorte	25	19	77	26	17	123	27	12	67

SECTION 2.—HEAVY BREEDS (SINGLE TESTING). THREE PULLETS IN EACH ENTRY.

Row No.	Name and Address.	Bird No.	Month ending 30/11/20.	Score to Date.	Bird No.	Month ending 30/11/20.	Score to Date.	Bird No.	Month ending 30/11/20.	Score to Date.
	BLACK ORPINGTONS.									
C	Lawson, E. A., Camberwell, Victoria	28	17	52	29	18	74	30	12	58
C	Bertelsmeier, C. B., Kensington	31	—*	—*	32	16	95	33	15	113
C	Shaw, R. R., Crystal Brook	34	18	97	35	13	77	36	15	61
C	Jarman, T. E., Epping, N.S.W.	37	—*	—*	38	—*	—*	39	15	59
C	Hogg, R. J., Morphett Vale	40	19	64	41	17	79	42	—*	—*
C	Shaw, R. R., Crystal Brook	43	20	93	44	11	60	45	12	32
C	Holmes, F. A., Naracoorte	46	15	51	47	6	46	48	17	70
C	Buttfield, C. C., Crystal Brook	49	15	76	50	11	51	51	13	82
C	Shevill, W. A., Beaumaris, Victoria	52	12	60	53	—*	—*	54	10	46
C	Eckermann, W. P., Eudunda	55	—*	—*	56	16	87	57	13	69
C	Lampert, Mrs. S., Piccadilly	58	14	93	59	18	73	60	—*	—*
C	Bansemer, Mrs. B., Beaumont	61	18	89	62	22	107	63	12	91
C	Siebler, J. M., North Broken Hill	64	—*	—*	65	—*	—*	66	14	128
D	Holmes, F. A., Naracoorte	1	16	148	2	Dead		3	18	113
D	Purvis, W., Glanville Blocks	4	16	86	5	Dead		6	21	69
D	Bertelsmeier, C. B., Kensington	7	26	140	8	21	88	9	28	90
D	Tester, G. P., Naracoorte	10	17	72	11	16	59	12	25	81
D	Kalms, A. G., Neale's Flat	13	Dead		14	14	69	15	16	73
	RHODE ISLAND REDS.									
D	Stacey, R. S., Hamley Bridge	16	15	56	17	16	52	18	21	72
D	Stockman, A., Goodwood	19	16	82	20	9	83	21	16	93
	RHODE ISLAND WHITES.									
D	Bansemer, Mrs. B., Beaumont	22	14	66	23	—*	—*	24	28	93

* Failed under Regulation 12.

SECTION 3.—LIGHT BREEDS (PEN TEST). SIX PULLETS IN EACH PEN.

Pen No.	Name and Address.	Breed.	Eggs Laid for Month Ending 30/11/20.	Total Eggs Laid from 1/4/20 to 30/11/20.
1	Hodges, F., Ballarat North, Victoria	White Leghorns	115	756
2	Bertelsmeier, C. B., Kensington	"	103	618
3	Beythien, E. W., Scott's Creek	"	104	487
4	McDonnell, G., Auburn, Victoria....	"	110	638
5	Bertelsmeier, C. B., Kensington	"	88	581
6	Thompson, E. F., Franklin.........	"	83	590
7	Purvis, W., Glanville Blocks	"	91	604
8	Smith & Gwynne, Gawler South ...	"	64	497
9	Anderson, S., Gawler Railway	"	116	735
10	Eckermano, W. P., Eudunda	"	75	529
11	Beythien, E. W., Scott's Creek	"	56	469
12	George, R., New Queenstown.......	"	42	623
13	Deacon, J. R., Solomontown	"	79	600
14	Alford, Thos., Broken Hill	"	111	754
15	Evans, H. A., Richmond	"	—*	—*
16	Connor, D. C., Gawler	"	103	549
17	Raymoor Poultry Farm, Kilkenny Blocks	"	117	673
18	Lampert, Mrs. S., Piccadilly........	"	75	440
19	Pool, F. J., North Norwood........	"	38	390
20	Woodhead, N., Torrensville	"	89	511
21	Thompson, E. F., Franklin.........	"	53	451
22	Randall, J., Bowden	"	65	334
23	Earle, E., Solomontown	"	—*	—*
24	Willington, Mrs. G., Milang	"	103	551
25	Vercoe, Wm., Sefton Park	"	111	694
26	Pugsley, A., Hindmarsh	"	71	430
27	Howie, H. H., Mount Gambier......	"	107	570
28	Purvis, W., Glanville Blocks	"	195	524
29	Anderson, W., Kapunda	"	96	434
30	Broderick, P. J., Burra	"	—	—
31	Eldridge, J. H., Norwood	"	110	593
32	Pope Bros. & Co., Hectorville	"	107	442
33	Oakey, E., Mannahill	Brown Leghorns	83	439

SECTION 4.—HEAVY BREEDS (PEN TEST). SIX PULLETS EACH ENTRY.

34	Hogg, R. J., Morphett Vale	Black Orpingtons ..	—*	—*
35	Bertelsmeier, C. B., Kensington.....	"	—*	—*
36	Eckermann, W. P., Eudunda	"	72	508
37	Lampert, Mrs. S., Piccadilly........	"	114	558
38	Bertelsmeier, C. B., Kensington	"	74	440
39	Bansemer, Mrs. B., Beaumont	"	85	422
40	Purvis, W., Glanville Blocks	"	—*	—*
41	Siebler, J. M., North Broken Hill ...	"	—*	—*
42	Bertelsmeier, C. J., Kensington	"	—*	—*
43	Purvis, W., Glanville Blocks	"	—*	—*
44	Frost, F. W., Wallaroo	Barred Rocks	74	342
45	Lampert, Mrs. S., Piccadilly	Black Orpingtons	91	722

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* Failed under Regulation 12.

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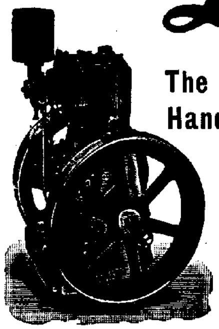

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DAIRY AND FARM PRODUCE MARKETS.

A. W. Sandford & Co., Ltd., report on December 1st:—

Butter.—Owing to the good rains recorded during the winter there has been an abundance of green feed, and supplies of butter have been very substantial throughout November. Local demand has been limited, no doubt the high prices interfering with sales. However, any surplus has been placed in cold storage on account of the Imperial Government contract, who are taking same at present ruling rates up to the end of March, 1921. The weather throughout has been favorable for the making and marketing of butter only a few hot spells being experienced. Values of top grades have maintained, but some lines of stores and collectors' butters have shown an easing, mostly on account of the condition on arrival. At the close of the month factory and creamery, in prints, sold at from 2s. 5d. to 2s. 6½d. per lb.; best separators and dairies, 2s. 4d. to 2s. 5d.; fair quality, 2s. 1d. to 2s. 2d.; well conditioned store and collectors', 1s. 11d. to 2s.; weather affected lots down to 1s. 10d. per lb.

Eggs.—Values throughout the month have been stationary, supplies having been kept up remarkably well, and indeed exceeding expectations. Local picklers have been busy in their operations, with over-sea buyers taking any surplus, so that markets have been kept nicely cleared. Present quotations:—Hen, 1s. 7d.; duck, 1s. 8d. per dozen.

Cheese.—The forwardings from the South-East have been very heavy, and the absence of export trade caused prices to come back. However, present rates have now brought along export orders, and stocks that were accumulating have now been considerably reduced. New make, 1s. ½d. to 1s. 1d. per lb. for large to loaf.

Honey.—The new take is coming forward very freely, and in consequence prices are lower. Quality is opening up very satisfactorily. Prime clear extracted selling at 6½d. to 7d. per lb., second grades slow at 5d. to 5½d., beeswax saleable at 1s. 9d. to 2s. per lb., according to quality.

Almonds.—Only odd lots arriving, which are going out readily; Brandis, 10½d.; mixed softshells, 9d. to 9½d.; hardshells, 5d. to 5½d.; kernels, 2s. 2d. to 2s. 3d. per lb.

Bacon.—Values have shown slight fluctuations during the month. Supplies have been light, but quite equal to requirements. Best factory cured sides, 1s. 7d.; middles, 1s. 8d.; hams, 1s. 11d. to 2s. per lb.

Live Poultry.—Farmers have been wisely sending in their surplus poultry in view of the good prices that are ruling, also poulterers now busily securing supplies and putting away in cold storage in anticipation of holiday requirements. Rates throughout have been very satisfactory, and good prices are sure to be obtained from now on to Christmas. Heavy-weight table roosters sold at from 6s. to 8s. 3d. each; nice conditioned cockerels, 5s. to 5s. 11d.; plump hens, 5s. 3d. to 6s. 9d.; light birds, 3s. 6d. to 5s.; ducks, 4s. to 10s. 3d. (young birds lower); geese, 6s. 6d. to 8s.; pigeons, 10d. each; turkeys, from 1s. 6d. to 2s. 2d. per lb. live weight for good prime table birds.

Potatoes.—Importations from Victoria have now ceased, and local supplies are quite sufficient for the trade, together with a few small consignments which have been received from Western Australia. Onions.—Old season's are all cleared up, and new are coming along very plentifully. Quotations.—Potatoes, new, £10 to £11 per ton on trucks Mile End; old, £8 to £9 per ton on trucks Mile End. Onions, new, £9 to £10 per ton on trucks Mile End.

THE AGRICULTURAL OUTLOOK.

Booborowie.—Weather—For harvest operations the weather has been anything but unique, 347 points of rain having been registered at intervals throughout the month. It is almost certain hay in many instances will be damaged. Crops are all good. Natural feed is abundant. Stock—All in good condition. Pests—Saffron thistles are becoming very numerous. Miscellaneous—Haymaking is practically finished, and barley and oats will be ready to strip in a few days.

Eyre Peninsula.—Weather has been fairly changeable, with a fair percentage of warm weather and some strong winds. Quite a steady soaking rain was received early in the month, 87 points being registered to date (26th), a quarter of an inch above the average. Over 17in. have now been recorded for the year, over 2in. above the average yearly rainfall. Crops are ripening quickly, and harvesting is in full swing. Much hay has had to be left out in the stooks until the grain is gathered in. Wind and rain damaged the hay a certain amount, and have lodged the grain crops a good deal, which means that the harvest will be prolonged. Red rust developed very quickly after November rain, but nearly all crops are too far advanced to be affected. Natural feed is very plentiful and of good quality.

Turretfield.—Weather--The weather during this month has been very unseasonable. Thunderstorms were numerous, and wet days of common occurrence. Hay harvest has been delayed, and although too wet for haycutting the crops have ripened off too quickly. A much greater area will be reserved this season for grain than is generally the case in this district, and some nice crops are to be seen. The hay crops, though bulky, will not weigh out as well as they appear. There is still a good supply of natural grass. Stock—There is a good demand for stock of good quality. The good prices for butter, fat lambs, and pork are making the farmer attend to these lines in a better manner than usual. Pests—Caterpillars of many varieties are numerous, and young vines and valuable crops are being sprayed where possible. Vinegrowers are afraid that black spot will affect the grape crop this year.

Veitch.—Weather—We have had 55 points of rain up to date for this month. Average for month, 104 points. Rather showery weather was experienced during the early part of the month, and this interfered with the hay harvest to a slight extent. Crops—All early varieties of cereals are now ripe for harvesting, and in some cases the wind has effected a loss both in the grain shaking and the straw going down. Generally speaking, good returns are showing. Natural feed is now drying off. Stock are all in healthy, fat condition. Pests—Nothing troublesome. Miscellaneous—A large quantity of hay is being harvested in the district this year and returns are very satisfactory, from 30cwt. to 2 tons. per acre.

HIGHEST HONORS FOR EFFICIENCY.

"Commonwealth"	"Union" Brand Cement
"Gisko"	Rabbit Poison
"Hick's"	"Ideal" Poison Carts
"Hurst's"	Wool Bale Fasteners
"Destruo"	Fly Traps
"I.X.L."	Rabbit Poison
"Jumbuck"	Sheep Branding Fluids
"E.R.B."	Crutching Outfits
"Koerstz"	Wool Presses
"Quibell's"	Liquid and Powder Sheep Dips
"Wolseley"	Sheep Shearing Machinery
"Kerol"	Disinfectant
"Torfol"	Sanitary Paint
"Prophylactic"	Sheep Lick

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THE ADELAIDE CHEMICAL AND FERTILIZER COMPANY, Ltd.,
CURRIE STREET, ADELAIDE.

BALD PATCHES IN IRRIGATED LUCERNE.

A correspondent who has an acre of lucerne under irrigation has submitted a number of inquiries, which have been replied to by the Superintendent of Experimental Work (Mr. W. J. Spafford). The questions and replies are as follows:—

1. When and how would you replant bald patches in three-year-old lucerne stand?

It is extremely difficult to thicken up a stand of lucerne or catch-up patches that have become bare, and it is nearly always found necessary to plough up the plot, grow one or two crops of a plant belonging to a class different from lucerne, then resow. The reason for the difficulty in getting the young plants to grow amongst or near to old plants seems to be same as that which works with many plants in nature (with the eucalypts, for instance, we seldom see young plants near old ones, but as soon as the parent plants are killed, seedlings appear in thousands), and appears to be caused by the roots of the plants giving off substances toxic to their own kind.

If you are to fill up the bare spaces, I think your only chance of doing it really well is thoroughly to work up the land, after having applied quicklime at the rate of at least 2 tons per acre, and well-rotted farmyard manure. Sow the seed in the autumn (April) at the rate of 25lbs. seed per acre, with superphosphate at the rate of at least 3cwt. per acre, and do everything possible to force the young plants. This forcing of the young plants in the autumn and winter, when the older plants are practically stationary, will be the main chance of getting them forward enough to compete with the existing stand in the next spring. You would help things by cutting a narrow, comparatively deep furrow around the outside of the patches, and this is practicable if the patches are few.

2. Is it wise to correct the bad grading in these lucerne plots by filling the hollows; if so, what depth of soil can be put on the lucerne without injuring it?

Irrigating by flooding as you do, it will never be possible for you to get full results until you do correct the grade of your plots. If you do not cut the lucerne in the "low" spots too short just before filling them in, you can safely put 4in. and perhaps 6in. in the hollows, particularly if you use a mixture of sand and well-rotted farmyard manure as the filling. If the first filling is not quite enough, you can put another one of nearly the same thickness later on, preferably after you have taken at least two cuts from the crop. Lucerne will stand a lot of covering, providing that it is with very fertile and very loose material.

3. My nine lucerne checks are all in a line, and have to be watered by the water entering plot 1, running over low bank to plot 2, then on to plot 3, and so on for the whole lot. Can you suggest some permanent check bank, as the sand ones are continually washing out?

I cannot suggest any practical method of overcoming your bank trouble under the present system of irrigating, other than removing banks and replacing the sand with silty soil. Your system of watering appears to me to be quite wrong for sandy soils, and if the crop is worth it, I think the only way to get maximum results would be for you to put a channel along the side of the first eight plots and water each check as a separate plot.

4. What winter fodder can I grow on these lucerne plots?

The only crop that I know that gives any chance of success for your purpose is berseem, but you must not forget that if you do grow this successfully in the lucerne plots, the lucerne will naturally suffer, and its life will be shortened. If you are prepared to try berseem, you should cut the lucerne crop not later than the last week in February, thoroughly prepare the land, say with a spring-tooth cultivator, or some such implement, immediately sow the berseem seed at the rate of at least 20lbs. per acre with 3cwts. superphosphate, after an irrigation. Despite the fact that the lucerne will not have finished growing, you must get the berseem in not later than the middle of March. Cut the lucerne each time it reaches 5in. or 6in. high, otherwise the berseem will not get a chance. Berseem, to be grown successfully, must be cut (for the first two cuts) when it reaches 9in. to 1ft. high, or thereabouts.

5. I applied 1½cwts. superphosphate and 1½cwts. bonedust per acre recently, and after next cut propose applying 2cwts. of each. Am I right?

Your manuring will give you marked increases in yields of lucerne, but you will get equal results at less cost if you substitute finely ground raw rock phosphate for the bonedust. Your soil being of a sandy nature, you will improve the crop by applying any well-rotted farmyard manure that is available.

RAINFALL TABLE.

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall at the subjoined stations for the month of and to the end of November, 1920, also the average precipitation to end of November, and the average annual rainfall.

Station.	For Nov., 1920.	To end Nov., 1920.	Av'ge. to end Nov.	Av'ge. Annual Rainfall
FAR NORTH AND UPPER NORTH.				
Oodnadatta	2·45	10·20	4·39	4·73
Marree	2·60	11·72	5·39	6·02
Farina	2·87	10·63	5·92	6·57
Copley	3·80	12·89	7·49	8·30
Beltana	4·09	13 08	8·13	8·93
Blinman	5·85	18·80	11·59	12·52
Tarcoola	1·05	13·73	6·84	7·33
Hookina	5·34	22·35	11·27	12·65
Hawker	7·23	24·94	11·44	12·37
Wilson	6·09	23·88	11·04	11·85
Gordon	6·67	20·35	9·78	10·43
Quorn	5·92	22·50	13·08	13·79
Port Augusta	3·56	15·58	8·88	9·42
Port Augusta West	3·37	15·48	8·67	9·36
Bruce	4·40	17·14	10·42	9·99
Hammond	3·84	18·62	10·62	11·36
Wilmington	5·57	24·03	16·13	18·06
Willowie	3·97	17·28	10·67	11·82
Melrose	4·75	28·12	22·06	23·11
Booleroo Centre	3·55	17·82	14·50	15·51
Port Germein	2·73	14 93	11·89	12·65
Wirrabara	4·55	26·91	18·44	19·44
Appila	3·65	16·20	12·80	14·90
Cradock	5·90	22·23	10·42	10·82
Carrieton	5·42	21·44	11·43	12·34
Johnburg	6·06	18·97	9·51	10·22
Eurelia	6 54	21·22	12·37	13·11
Orroroo	6·53	19·97	12·56	13·42
Nackara	6·85	20·57	10·21	10·63
Black Rock	6·43	20·75	11·51	12·29
Ucolta	4·16	14·37	11·01	11·65
Peterborough	4·13	16·17	12·42	13·28
Yongala	5·44	19·92	13·28	14·13
LOWER NORTH-EAST.				
Yunta	3·97	15·12	7·90	8·40
Waukaringa	3·71	14·54	7·38	8·15
Mannahill	2·06	9·96	7·78	8·51
Cockburn	1·39	11·68	7·50	8·03
Broken Hill, NSW	1·02	10·32	9·05	9·89
LOWER NORTH.				
Port Pirie	3·00	16·53	13·51	13·26
Port Broughton	2·05	16·69	13·44	14·13
Bute	2·69	17·29	14·80	15·55
Laura	3·99	22·37	17·46	18·12
Caltowie	3·10	18·81	16 02	17·02
Jamestown	3·85	23·18	15·65	17·56
Bundaleer W.Wks.	3·33	22·83	16·40	17·56
Gladstone	3·61	19·52	15·16	16·05
Crystal Brook	3·24	20·87	14·60	15·62
Georgetown	3·06	21·05	17·32	18·30
Narridy	2·75	17·01	16·50	16·43
Redhill	3·70	21·76	15·82	16·66

Station.	For Nov., 1920.	To end Nov., 1920.	Av'ge. to end Nov.	
LOWER NORTH—*continued.*				
Spalding	3·21	24·78	18·85	[illegible]
Gulnare	3·82	23·45	17·82	[illegible]
Yacka	2·54	18·13	14·43	[illegible]
Koolunga	3·45	18·49	14·80	[illegible]
Snowtown	3·09	17·56	15·14	[illegible]
Brinkworth	3·35	20·42	15·22	[illegible]
Blyth	3·26	20·71	15·78	[illegible]
Clare	2·73	27·74	23·21	[illegible]
Mintaro	3·72	28·85	21·95	[illegible]
Watervale	3·39	29·30	26·14	[illegible]
Auburn	3·28	25·53	16·56	[illegible]
Hoyleton	2·89	18·59	16·89	[illegible]
Balaklava	3·27	18·30	14·94	[illegible]
Port Wakefield	2·57	16·19	12·52	[illegible]
Terowie	3·68	14·37	12·58	[illegible]
Yarcowie	3·71	15·56	13·17	[illegible]
Hallett	3·32	17·93	15·32	[illegible]
Mount Bryan	3·73	18·67	15·31	[illegible]
Burra	4·20	21·22	16·87	[illegible]
Farrell's Flat	3·01	20·63	17·93	[illegible]
WEST OF MURRAY RANGE.				
Manoora	3·13	23·02	17·62	[illegible]
Saddleworth	2·70	20·46	17·69	[illegible]
Marrabel	3·70	24·05	17·52	[illegible]
Riverton	2·58	20·13	19·77	[illegible]
Tarlee	2·71	21·93	17·13	[illegible]
Stockport	2·25	17·50	15·48	[illegible]
Hamley Bridge	1·92	16·23	16·49	[illegible]
Kapunda	2·92	16·64	17·87	[illegible]
Freeling	1·75	16·11	16·98	[illegible]
Greenock	2·11	19·43	20·54	[illegible]
Truro	3·16	19·54	19·17	[illegible]
Stockwell	2·75	18·85	19·29	[illegible]
Nuriootpa	2·63	20·03	19·91	[illegible]
Angaston	2·62	23·49	21·38	[illegible]
Tanunda	2·27	21·06	21·23	[illegible]
Lyndoch	2·74	27·32	21·74	[illegible]
Williamstown	3·18	29 11	26 49	[illegible]
ADELAIDE PLAINS.				
Mallala	2·08	17·04	15·74	[illegible]
Roseworthy	2·14	18·22	16·48	[illegible]
Gawler	1·92	20·57	18·23	[illegible]
Two Wells	2·15	16·90	15·12	[illegible]
Virginia	2·89	20·00	16·41	[illegible]
Smithfield	2·60	19·90	16·06	[illegible]
Salisbury	2·50	18·52	17·66	[illegible]
North Adelaide	2·45	28·45	20·80	[illegible]
Adelaide	2·29	24·60	20·00	[illegible]
Glenelg	1·98	19·71	17·47	[illegible]
Brighton	2·66	24·20	20·09	[illegible]
Mitcham	3·19	30·87	22·60	[illegible]
Glen Osmond	2·48	28·35	24·53	[illegible]
Magill	2·70	26·02	24·03	[illegible]

RAINFALL—*continued.*

tation.	For Nov., 1920.	To end Nov., 1920.	Av'ge. to end Nov.	Av'ge. Annual Rainfall
MOUNT LOFTY RANGES.				
Gully	2·86	29·19	26·47	27·73
West	3·27	46·69	44·81	46·82
	3·79	40·62	42·47	44·49
n	2·20	30·76	31·65	33·18
t Vale	2 19	22·75	21·59	22·90
ga	2·26	23·52	20·62	20·21
	3·39	30·99	24·90	25·82
	2·18	21·55	19·30	20·22
	2·24	30·67	—	—
ville	1·81	22·55	20·15	20·53
la	2·14	25·92	22·63	22·93
leasant	2·33	31·38	25·93	27·01
d	2·41	28·00	28·17	29·43
ha	2·53	33·41	31·63	33·33
k Rsvr.	3·31	—	—	—
le	3·04	37·25	34·22	35·60
e	2·91	34·87	30·82	32·05
le	3·00	33·70	33·35	34·81
	2·58	27·14	27·03	28·58
arker	2·95	33·35	29·89	31·10
	2·67	34·92	—	32·94
eld	2·69	30·16	28·71	30·60
	3·00	34·53	33·65	36·26
yn	2·51	19·33	18·46	19·28
MURRAY FLATS AND VALLEY.				
	1·36	15·32	17·86	18·77
	1·37	13·19	14·81	15·56
e's Brdg.	2·08	14·49	13·83	14·59
n	1·74	12·46	13 16	14·82
end	1·36	12 86	13·35	14·55
Bridge	0·99	10·82	13·15	13·98
n	1·90	13·90	14·66	15·45
	1·55	11·24	10·95	11·51
	1·69	16·63	14·35	15·23
	1·64	12·37	11·31	12·07
ch	1·29	11·55	10·00	10·80
own	1·25	7·59	9·57	10·26
	4·17	19·58	16·45	17·51
ds	2·86	12·19	10·16	10·90
	1·31	9·77	8·37	9·13
	1·26	10·95	8·55	9·41
Corner	0·89	9·63	10·28	11·11
	1·24	15·29	11·36	12·27
	1·54	12·62	11·00	10·92
WEST OF SPENCER'S GULF.				
	0·47	8·50	10·24	10·03
ell	0·04	6·91	8·70	9·24
Bay	1·01	16·28	11·99	12·11
	1·72	13·51	11·75	12·26
y	1·58	10·58	9·75	10·47
ay	1·46	14·25	9·49	10·37
	1·50	16·75	12·26	12·97
Bay	1·28	21·96	14·02	15·09
	0·89	18·51	14·42	15·35
ton	0·92	25·53	—	16·37
	1·91	20·86	—	—

Station.	For Nov., 1920.	To end Nov., 1920.	Av'ge. to end Nov.	Av'ge. Annual Rainfall
WEST OF SPENCER'S GULF—*continued.*				
Port Lincoln	2·10	21·43	13·88	19·83
Tumby	1·91	16·19	13·49	14·76
Carrow	2·12	13·86	12·83	15.14
Arno Bay	1·80	12·81	—	13.10
Cleve	2·15	—	—	—
Cowell	2·17	11·17	11·10	11.56
Point Lowly	1·74	12·27	11·15	11·84
Minnipa	1·08	—	—	—
YORKE PENINSULA.				
Wallaroo	1 87	15·26	13·51	14·11
Kadina	1·96	18·63	15·35	15·93
Moonta	1·64	15·16	14·61	15.31
Green's Plains	2·57	17·65	15·07	15·75
Maitland	2·21	19·05	19·37	20·20
Ardrossan	2·17	14·84	13·36	13·96
Port Victoria	1·98	15·92	14·73	15·34
Curramulka	1·56	16·46	17·62	18·31
Minlaton	1·79	19·61	17·16	17·70
Brentwood	1·82	16·81	14·84	15·44
Stansbury	1·77	15·55	16·45	17·08
Warooka	2·07	17·31	17·14	17·74
Yorketown	1·45	17·18	16·65	17·29
Edithburgh	1·64	15·58	15·95	16·58
SOUTH AND SOUTH-EAST				
Cape Borda	2·45	31·93	24·07	24·96
Kingscote	1·49	29·09	18·13	18.92
Penneshaw	1·39	21·70	20·59	21·39
Victor Harbor	1·97	20·86	20·60	21·56
Port Elliot	1·89	20·76	19·30	20·00
Goolwa	1·80	16·14	17·08	17·87
Mindarie	1·00	—	—	—
Karoonda	0·80	—	—	—
Meribah	0·77	—	—	—
Pinnaroo	0·73	14·49	15·45	15·57
Parilla	0·74	16·28	13·14	14·02
Lameroo	0·97	15·78	15·34	16·45
Parrakie	1·07	16·07	13·39	14·42
Geranium	0·66	16·63	14 90	16·24
Peake	0 74	16·20	15·02	16·25
Cooke's Plains	1·27	12·83	14·14	15·00
Coomandook	1·51	14·41	16·65	17·75
Coonalpyn	1·05	13·70	16·62	17·64
Tintinara	1·45	16·11	16·53	18·83
Keith	2·05	16·98	17·26	18·54
Bordertown	1·74	17·94	18·40	19·52
Wolseley	1·25	18·20	17·14	18·07
Frances	1·46	15·37	18·84	20·10
Naracoorte	1·24	21·38	23·57	22·53
Penola	1·86	24·97	25·01	26·48
Lucindale	1·54	23·78	21·72	22·93
Kingston	1·61	23·77	23·28	24·51
Robe	1·20	28·63	23·54	24·60
Beachport	1·02	29·17	26·08	27·29
Millicent	1·60	34·30	27·99	29·29
Kalangadoo	2·12	32·73	—	—
Mount Gambier	1·30	26·67	28·79	31·65

AGRICULTURAL BUREAU REPORTS.

INDEX TO CURRENT ISSUE AND DATES OF MEETINGS.

Branch.	Report on Page	Dates of Meetings.	
		Dec.	Jan.
Alawoona	‡	‖	‖
Aldinga	*	—	—
Amyton	§	‖	‖
Angaston	*	—	—
Appila-Yarrowie	*	—	—
Arthurton	*	—	—
Ashbourne	456	27	24
Balaklava	*	11	8
Barmera	441	—	—
Beetaloo Valley	430	‖	‖
Belalie North	*	18	22
Berri	443	22	26
Big Swamp	*	23	20
Blackheath	‡	18	22
Blackwood	461	20	17
Blyth	*	18	22
Booleroo Centre	*	23	20
Borrika	*	—	—
Bowhill	*	—	—
Brentwood	*	23	20
Brinkley	‡	18	22
Bundaleer Springs	*	—	—
Burra	*	—	—
Bute	*	21	18
Butler	436	—	—
Caltowie	*	—	—
Canowie Belt	*	—	—
Carrow	*	23	20
Cherry Gardens	461	21	18
Clanfield	*	‖	‖
Clare	431	7	4
Clarendon	*	20	24
Claypan Bore	445	21	26
Cleve	440	18	19
Collie	*	—	—
Colton	*	—	—
Coomandook	455	24	28
Coonalpyn	*	23	22
Coonawarra	*	—	—
Coorabie	*	—	—
Cradock	*	—	—
Crystal Brook	*	18	—
Cummins	*	18	22
Cygnet River	456	23	20
Dawson	*	—	—
Denial Bay	*	—	—
Dowlingville	435	—	—
Edillilie	437	18	29
Elbow Hill	437	—	1, 29
Eurelia	*	—	—
Frances	*	18	29
Freeling	*	—	—
Gawler River	*	27	24
Georgetown	*	18	22
Geranium	*	18	29
Gladstone	430	‖	‖
Glencoe	*	16	—
Glossop	445	—	—
Goode	*	22	26
Green Patch	‡	—	—
Gumeracha	*	22	26
Halidon	*	—	—
Hartley	457	1	—
Hawker	*	28	25
Hilltown	*	—	—
Hookina	428	23	20
Inman Valley	‡	23	—
Ironbank	461	18	22
Julia	*	—	—
Kadina	*	—	—
Kalangadoo	*	11	8
Kanmantoo	*	18	22
Keith	*	—	—
Ki Ki	*	—	—
Kilkerran	434	‖	
Kimba	*	—	—
Kingscote	*	—	—
Kingston-on-Murray	*	—	—
Kongorong	462	23	20
Koonibba	*	23	20
Koppio	438	20	24
Kybybolite	*	23	20
Lake Wangary	440	18	22
Lameroo	448	—	—
Laura	*	24	21
Leighton	*	—	—
Lenswood and Forest Range	457	18	22
Lone Gum	455	—	—
Lone Pine	*	21	—
Longwood	457	11	—
Loxton	*	—	—
Lucindale	*	—	—
Lyndoch	431	‖	‖
MacGillivray	457	22	19
Maitland	‡	4	1
Mallala	431	6	3
Mangalo	*	—	—
Mantung	*	—	—
Meadows	461	22	19
Meningie	459	—	—
Meribah	‡	22	19

INDEX TO AGRICULTURAL BUREAU REPORTS—*continued.*

Branch.	Report on Page	Dates of Meetings.	
		Dec.	Jan.
Milang	459	11	8
Millicent	*	—	8
Miltalie	‡	‖	‖
Mindarie	*	6	3
Minlaton	*	24	21
Minnipa	*	‖	‖
Mintaro	430	18	22
Monarto South	‡	—	21
Moonta	434	‖	‖
Moorak	462	—	—
Moorlands	*	—	—
Moorook	*	—	—
Morchard	428	18	22
Morgan	*	—	—
Morphett Vale	460	23	‖
Mount Barker	461	22	19
Mount Bryan	*	—	—
Mount Bryan East	‡	‖	‖
Mount Compass	*	—	—
Mount Gambier	‡	11	8
Mount Hope	*	18	22
Mount Pleasant	460	10	—
Mount Remarkable	*	—	—
Mundalla	*	22	19
Mundoora	*	27	24
Murray Bridge	‡	7	—
Mypolonga	455	22	19
Myponga	*	—	—
Nantawarra	434	‖	19
Naracoorte	‡	11	8
Narridy	*	11	8
Narrung	*	18	22
Netherton	455	18	—
North Booborowie	‡	—	—
North Bundaleer	*	—	—
Northfield	*	8	12
Nunkeri and Yurgo	*	5	2
O'Loughlin	*	22	19
Orroroo	*	—	—
Parilla	*	—	—
Parilla Well	‡	‖	‖
Parrakie	*	—	—
Paruna	*	—	—
Paskeville	435	21	—
Penola	‡	4	1
Penong	*	18	22
Petina	440	18	29
Pine Forest	*	‖	‖
Pinnaroo	448	24	21
Pompoota	449	—	—
Port Broughton	*	24	21
Port Elliot	460	18	15
Port Germein	431	18	—
Port Pirie	*	18	22
Ramco	‡	20	24
Redhill	‡	—	—
Renmark	450	23	20
Riverton	*	—	—
Riverton (Women's)	*	—	—
Roberts and Verran	‡	20	24
Rosedale	432	‖	‖
Rosy Pine	454	‖	‖
Saddleworth	*	—	—
Saddleworth (Women's)	434	—	—
Salisbury	434	7	4
Salt Creek	‡	‖	‖
Sandalwood	*	—	—
Sherlock	*	—	—
Shoal Bay	†	23	—
Smoky Bay	439	—	—
Spalding	*	—	—
Stockport	*	—	—
Strathalbyn	‡	21	18
Talia	*	13	10
Tantanoola	‡	—	—
Taplan	455	‖	‖
Tarcowie	429	21	18
Tatiara	*	18	15
Two Wells	432	—	—
Uraidla and Summert'n	*	6	3
Veitch	*	—	—
Waikerie	455	—	—
Wall	*	—	—
Wanbi	*	—	—
Warcowie	‡	—	—
Warrow	440	—	—
Watervale	434	—	—
Wepowie	*	18	22
Whyte-Yarcowie	*	—	—
Wilkawatt	455	‖	‖
Williamstown	*	17	—
Willowie	*	22	19
Wilmington	429	22	19
Wirrabara	431	—	—
Wirrega	*	—	—
Wolowa	*	—	—
Woodleigh	*	—	—
Woodside	*	18	22
Wudinna	439-40	—	—
Wynarka	456	—	—
Yabmana	*	—	—
Yacka	*	21	18
Yadnarie	440	22	19
Yallunda	*	—	—
Yaninee	*	‖	‖
Yeelanna	440	18	22
Yongala Vale	*	24	21
Yorketown	*	—	—
Younghusband	‡	‖	‖

* No report received during the month of November. † Formal report only received.
‡ Held over until next month. ǂ Report of Congress received. ‖ Recess.

THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.

Every producer should be a member of the Agricultural Bureau. A postcard to the Department of Agriculture will bring information as to the name and address of the secretary of the nearest Branch.

If the nearest Branch is too far from the reader's home, the opportunity occurs to form a new one. Write to the department for fuller particulars concerning the work of this institution.

REPORTS OF BUREAU MEETINGS.

UPPER-NORTH DISTRICT.

(PETERBOROUGH AND NORTHWARD.)

HOOKINA (Average annual rainfall, 12in.).

October 21st.—Present: eight members.

Hay Making.—In the course of a paper dealing with this subject, Mr. S. Stone said the first thing that should be attended to in connection with haymaking was the overhauling of the binder, particularly in a season when the crops were heavy to handle. The crop should be carefully examined and cut at the proper time, because a crop cut either too early or too late was often the cause of inferior hay. About 10 to 14 days after the wheat had flowered was a good time to cut the crop and secure a class of hay that could be used for feeding long or for chaffing purposes. Where hay had to be fed long it was preferable to cut the crop a little on the green side. If the hay was rank and coarse it should be chaffed to avoid waste, as the stock simply ate the heads off and left the coarse straw. The sheaves should be stooked about 24 hours after cutting, with stooks containing 15 to 20 sheaves. Providing the weather was of a drying nature the hay should be ready to cart and stack within a fortnight, without any danger of heating taking place in the stack. As soon as the straw was procurable the stack should be covered. The varieties of wheat that were most suitable for hay in that district were:—King's Early, or King's White for early cutting, and Dart's Imperial or Queen Fan for late harvesting. An interesting discussion followed, in which Messrs. M. Heneschke and J. Barnes took part.

MORCHARD (Average annual rainfall, 13.50in.)

September 25th.—Present: 14 members and visitors.

Lamb Marking.—"Lamb marking is a very important operation worthy of care and cleanliness," was the opening statement of Mr. E. C. King in a paper on the subject, "Lamb Marking." Continuing, the speaker said the person operating should see that his instruments were clean and well sterilised by washing in some antiseptic, such as lysol solution, phenyle, or condy's solution, or even kerosine. A pan of the solution should be kept handy, in which the knives and pliers should occasionally be dipped. The hands and the mouth should be rinsed out occasionally with condy's. By taking those precautions the risk of losing lambs from tetanus after marking would almost entirely disappear, provided that the yards were kept clean. The lambs should be held by an assistant over a low rail, conveniently high enough for the operator standing on the other side. Both legs of each side of the lamb should be firmly held by one hand on each side, in such a way that the purse or scrotum was easily reached, but they should not be held too far apart so that the lamb was injured. The rump should rest on the rail, with the back against the assistant's chest or shoulder. There were two methods of operating. The one that was mostly adopted on account of its advantages was that of slitting the purse from side to side across the extreme end sufficiently deep to allow only the testicles to protrude so that they could be gripped with the teeth. The other way was by cutting the end of the purse clean off. That method was faulty. With the former the wound healed quickly, and the dirt did not get in. The slitting should be done with a sharp, long-pointed, curved knife, and care taken not to cut in too deeply, but just enough for the testicles to be easily squeezed out. If they did not readily protrude each forefinger and thumb should hold the cord at the back of each testicle firmly, to help break it when the testicles were drawn out. The purse should then be pressed together, and some healing antiseptic that would also keep the flies away should then be applied. When docking the tail it was best to cut through at a joint, either long or short, whichever was desired. With a small flock three yards were all that were necessary—one to hold the mob; one small catching yard to hold, say, 30 ewes, with their lambs; and one yard to let the lambs into after marking. In the last-mentioned yard a few grown sheep should be placed, to keep the lambs from racing about, and into it the ewes should be put when the catching pen was clear of lambs. When the job was finished the tails and testicles lying about should be collected, and either burnt or buried. When the ewes and lambs were turned out it was well to hold them in a scattered mob for a while, and then allow them to draw off in one direction, so that the lambs could find their mothers. In about a week's time the lambs should be examined in the paddock to see if there were any signs of fly blowing; if so they should be yarded and dressed, but there would be little danger of that if a good antiseptic had been used on the wound at the time of marking. An interesting discussion followed.

TARCOWIE (Average annual rainfall, about 15½in.)

October 26th.—Present: 16 members.

The Benefits of the Agricultural Bureau.—In a short paper under this heading, Mr. G. L. Hortin said there were many benefits that the man on the land was able to obtain from an active membership of the Bureau. It brought together a body of men who were interested in the production of grain and stock raising, and by the discussion of their successes or failures they were able to help each other. The Bureau was a great advantage to a newcomer to a district, and the man who was just commencing farming, for it gave them the opportunity of learning what cereals to grow and how to work the land without having to wait for experience. Another advantage was that if the members took an active part in the various discussions they would learn the art of speaking their thoughts in public. Then there was the assistance and advice that members were always able to obtain from the expert officers of the Department. In addition to that, each member of the Bureau was entitled to a copy of the *Journal of Agriculture,* which contained the reports of the Branches of the Bureau and the results of the Government Experimental Farms, besides other items of particular interest to the man on the land. He was convinced that any man on the land could not do better than become an active member of the Bureau. The report of the delegates to Congress was received and discussed.

WILMINGTON (Average annual rainfall, 18.26in.).

November 3rd.—Present: eight members.

The Blowfly Pest.—Mr. J. W. Hannagan read a short paper on this subject, and in the discussion that followed many remedies, such as bluestone, tar, kerosine, sheep-dip, &c., were mentioned, but no remedy to keep away the pest seemed to be lasting. In the previous years only the ewes of a flock were affected, but during the present season lambs and wethers appeared to suffer just as badly. Should the pest continue to increase, members thought the position would be a very serious one. At shearing time the smell from the affected sheep was very offensive, and the shearers would object to handling them. In years to come it would affect not only the production of wool, but also the meat market.

MIDDLE-NORTH DISTRICT.

(PETERBOROUGH TO FARRELL'S FLAT.)

BEETALOO VALLEY (Average annual rainfall, 18in. to 19in.)

October 27th.—Present: 16 members and visitors.

Farm Management.—Mr. E. A. Pearce, who contributed a paper under the heading, "How to Make Farming Pay," said the first essential in making farming a profitable undertaking was the selection of a good block of land in a district with a reliable average rainfall. Good water supplies and proximity to a township and railway were also two points worthy of serious consideration. The farm should be well fenced, with a comfortable house for the family, good sheds for the animals, and suitable buildings for implements when not in use. Too often one saw the machines left out in all weathers, thus considerably reducing their life of usefulness. Although at present there was every indication of a good price being received for wheat, he preferred mixed farming. In stocking a farm one should secure the best animals with the money available. The farmer should never lose sight of the fact that proper conservation of fodder was half the battle, and he should always try to have a stack of hay as a standby. To be successful with wheat growing the farmer should have early fallow, which should be kept well worked right up to the time of seeding. It was far better to have a fair area well done than a lot of neglected fallow. At seeding the land should be given a good dressing of super. A farm should carry as many sheep as possible, for they kept the land clean and manured it. If feed was scarce for a short period of the year hand feeding should be resorted to. No farm should be without a few cows. They were a great tie, but the household supply of milk, cream, and butter, in addition to the cream and butter cheques, helped to make the farm pay. Pigs, and preferably the Berkshire breed, were well worthy of a place on the farm. All food required for the pig was very dear, but with the present price of bacon and pork, and a little knowledge of pig raising, one should be able to make the pig a very profitable side line. As regards poultry, his idea was to keep all fowls housed, as there would be less food required and more eggs laid, and altogether a greater satisfaction to the farmer. So far he had only dealt with the working of the farm, but he believed that the most important aspect of agriculture was a scientific knowledge of the cultivation of the soil. Those men who had sons who intended going on the land should, if possible, give them a course of education at the Roseworthy Agricultural College. It was not the hard worker alone who succeeded, but the man who thought and worked out his problems for himself.

GLADSTONE (Average annual rainfall, 16in.).

October 23rd.—Present: seven members.

The Chairman (Mr. R. H. Coe), in opening a discussion on "The Care of the Lambing Ewe," said the sheep at the present time were being considerably troubled with blowflies. Mr. Lines was of the opinion that the abundance of green feed was probably the cause of the trouble. He had tried dipping, but it did not seem to have any beneficial effect on the sheep. The best remedy was to treat the animals with Stockholm tar. The speaker advised farmers to set aside portion of the hay crop as reserve forage for the ewes and lambs. It was generally agreed that the best results would be obtained if the ewes were mated in time to commence lambing about April. Other matters of local interest were brought before the meeting.

MINTARO.

September 25th.—Present: 15 members and visitors.

An interesting debate took place on the question, "Do Farmers Pay too Much in Agents' Fees?" Messrs. R. Hean, D. Garrett, jun., and J. Jamieson, jun. maintained the affirmative of the subject, while Messrs. McNamara, D. Garrett, sen., and W. Jones upheld the negative point of view. The Hon. Secretary (Mr. H. Schuncke) who adjudicated, gave his decision in favor of the members who discussed the negative aspect of the position.

WIRRABARA (Average annual rainfall, 18.91in.)
September 24th.—Present: 18 members.

Mr. J. H. Jaeschke read a short paper, "Sheep Dipping." A further meeting of the Branch was held on October 23rd, when several subjects of local interest were brought before the members.

PORT GERMEIN, October 30th.—The report of the delegates to the Annual Congress was received and discussed, and several other items of local interest were brought before the meeting.

LOWER-NORTH DISTRICT.

(ADELAIDE TO FARRELL'S FLAT.)

CLARE (Average annual rainfall, 24.30in.).
October 5th.—Present: 15 members.

Action of Remedies in Cattle.—Mr. J. Scales, who read a paper on this subject, said medicines should, as far as possible, be given to cattle in liquid form, and in more bulky form than to horses. The medicine should also be given slowly, as the chances were better of it passing into the fourth stomach. Cattle also took from one and a half to two times the dose taken by a horse. Aloes, though so excellent a purgative for horses, was not a good remedy for cattle, while Epsom salts, that were cold and drastic for horses, gave excellent results on cattle. Calomel and other forms of mercury acted violently on cattle, salivating them, and in milch cows it was excreted through the milk, seriously affecting sucking calves. Mustard as a blister, acted with more vigor on cattle than on the horse, but turpentine was not so effective. Reference was also made to the symptoms of milk fever and castration of colts. In the discussion that followed, Mr. R. O. Knappstein asked if there was any known remedy to give to cows poisoned after eating Cape tulip. Mr. Scales stated that, provided the beast was taken in hand soon after showing symptoms, an antidote such as arsenic, administered in small quantities at short intervals, would give good results. He did not think that cows would become accustomed to eating Cape tulip without showing symptoms of poisoning. Other members thought that they could do so. It was stated during the discussion that Cape tulip, if dry, would not poison stock if they ate it, but if it was cut with the hay and chaffed it would mean serious consequences if fed to them.

[Mr. C. A. Loxton, B.V.Sc. (Government Veterinary Surgeon) states, "Arsenic is of no value as an antidote in cases of Cape tulip poisoning."—Ed.]

LYNDOCH (Average annual rainfall, 23.01in.)
October 21st.—Present: 19 members.

A discussion took place on the right time at which to ring the currant vine, and the effect that it had on the vine and resultant fruit. Members were agreed that the best time at which to perform the work was when the bunches were shedding their flowers, and that the ringing had the effect of holding up the sap flow for about 14 days. A discussion also took place on the root growth of the vine.

MALLALA (Average annual rainfall, 16.88in.).
September 6th.—Present: 11 members and visitors.

Broadcasting *versus* Drilling.—Mr. T. H. Arnold, who contributed a paper dealing with this subject, said it was almost universally recognised that the one correct method of seeding was through the medium of the drill, yet for the farmer, who only had mid or late season fallow, he believed that the broadcaster would give better results, particularly if the crop was sown for hay. Some years ago, before he had owned a drill, he borrowed a machine from a neighbor and drilled in about 20 acres right through the middle of a paddock.

On the land on either side of that strip the manure had been applied beforehand, and the whole of the section was sown in less than a fortnight. The land on either side of the drilled portion was sown with the broadcaster, and the strip in the middle with seed and manure. The whole paddock was sown with White Tuscan wheat and finally cut for hay. The drilled land came up somewhat thicker than the broadcasted area, and during the winter months it forged ahead, but towards the end of September the broadcasted land made good headway, and at harvest time was at least 8in. higher than the land sown with the drill. A few advantages of the broadcasting were as follows:—The manure can be drilled in to the land towards the end of summer, usually during March, when both land and manure are thoroughly dry. An early start can be made so that if wet or rough weather set in the work can be set aside and something else taken in hand. When seeding time arrives, and the land is fallowed and in good order, the actual work of sowing the seed can be performed in a very short time. Continuing, the speaker said that his experience had been that the first half of the crop, put in whilst the weeds were young, and the seed covered with a set of medium weighted chisel harrows, would, in most cases, give a heavier cut of hay, than that portion sown later in the season. The farmer who had his manure sown prior to broadcasting, could, when the right seeding time came along, get a larger area of his crop in than the farmer who had to handle both seed and manure. The heaviest hay crop that had been grown in the Roseworthy district for a considerable number of years was one that had been broadcasted and then covered with harrows. That crop cut 4 tons 6cwt. to the acre. If one wished to secure a thick crop with the drill, without fear of overcrowding in the rows, it was necessary to cross drill, and that meant double work. He was of the opinion that he would need to see more advantage from drilling before he would do all extra work connected with seeding by that method.

Farm Machinery.—At a further meeting held on October 4th, Mr. D. J. Fraser read an interesting paper, "Farm Machinery," and a lengthy discussion followed.

Appreciation of Services Rendered.—At the close of the meeting the President (Mr. J. A. Arnold), on behalf of the members of the Branch, presented the Hon. Secretary (Mr. A. E. Temby) with a handsome blackwood writing desk. In handing the present over, Mr. Arnold mentioned that Mr. Temby had been a member for nine years. During that period he had held the position of Hon. Secretary for eight and a half years. He had fulfilled his duties with utmost satisfaction, and had put up the fine record of only missing two meetings. He was glad that members had recognised the services rendered, and hoped Mr. Temby would be spared to fill the position for a long time to come. All present supported the President's remarks. Mr. Temby suitably replied, and assured members that he would always try to do his best in the future as he had in the past.

ROSEDALE.

August 25th.—Present: 22 members and visitors.

Mr. Lienert read a paper, "Work between Harvesting and Seeding." At a further meeting, held on October 2nd, a large number of members and visitors visited the Government Experimental Farm at Turretfield, and spent an interesting afternoon inspecting the stud stock, &c.

TWO WELLS (Average annual rainfall, 16.36in.)

August 30th.—Present: eight members.

Mr. C. Verner read an extract from Bulletin 73, "Wheaten Hay: Investigations as to What Stage of Development to Cut to Best Advantage," and an interesting discussion followed.

At a further meeting, held on September 27th, the Acting Secretary of the Advisory Board (Mr. H. J. Finnis) visited the Branch, and delivered an address, "The Agricultural Bureau and the Agricultural Industry."

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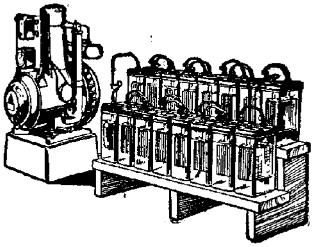

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NANTAWARRA, October 22nd.—The Wool Instructor of the School of Mines (Mr. L. Codrington) visited the Branch and gave a lecture and demonstration on ''Wool Classing.''

SADDLEWORTH (WOMEN'S), November 9th.—Mrs. Walsh contributed a paper, ''Our Local Show and Its Advantages,'' which was read by the Hon. Secretary (Mrs. L. Melville). An interesting discussion followed.

SALISBURY, November 2nd.—Mr. R. Baker, of the Roseworthy Agricultural College, attended the meeting and gave an address on ''Herd Testing,'' and a demonstration of milk testing.

WATERVALE, September 24th.—The delegates to the Annual Congress gave a review of the proceedings. A discussion took place on the paper by Mr. H. W. Jones, of the Mount Barker Branch, on ''Improvement of Dairy Stock,'' and members expressed the opinion that something should be done to eliminate the use of mongrel bulls.

YORKE PENINSULA DISTRICT.

(TO BUTE.)

KILKERRAN.

October 21st.—Present: 15 members and visitors.

How to Make Farm Life Attractive.—The monthly meeting of the Branch was held at Mr. T. Brown's residence, when a paper dealing with the above subject was read by Mr. F. Francis. The speaker believed the question to be one of vital importance to the farmer if he wished to keep his sons and daughters on the land. He was of the opinion that one of the best things the farmer could do for his sons was to give them an active interest in the work of the farm. For instance, when the lad was about to commence fallowing a few acres of land should be set aside for him to work for his own benefit. After he had worked a season with the horses he should be allowed a voice in the selection of his team, and if the farmer challenged his son that his team would look the better of the two at the end of the season, there would not be much fear of the horses being neglected, for the boy would naturally try his best to defeat his father. If there was more than one son on the farm the second lad could be given the care of the sheep, and if given a pecuniary interest in them he would see that they did not want for a change of pasture and good supplies of water. To the third son could be allotted the task of looking after the pigs and fowls. A young pig should be set aside as his personal property, and in looking after that animal he would be taking care of the other pigs; and if given a percentage of the eggs, or their equivalent in money, there would not be many rotten eggs lying about the farm. The catering for the social requirements of the young folks was also another aspect of farm life that should not be overlooked. They should not be denied the privilege of social intercourse, but encouraged to hold social evenings and other forms of amusement. Cricket and football appealed to most boys, while tennis and croquet would find favor with the girls. For evening amusements cards were a very popular form of entertainment, and once a month it would be a good idea to hold a dance. At the conclusion of the meeting dancing and games were indulged in, and an excellent supper was provided by Mrs. Brown.

MOONTA (Average annual rainfall, 15.22in.).

September 28th.—Present: 17 members and five visitors.

Handy Farm Mechanics.—Mr. H. J. Cadd contributed a paper on this subject, which was illustrated with blackboard drawings. Railroad iron, he said, could be made into handy shop anvils. A piece about 30in. long, shaped to form a horn at one end with a hole punched in the other end, made a serviceable anvil. A shorter piece, about 12in. long, made a very serviceable vice anvil; one end should be pointed and the other punched. If the flange was trimmed off the bottom of the rail it would then fit into the vice. There were certain screws and bolts about farm machinery that were very awkward to turn with a screw driver or spanner. The screws could be converted into thumb screws by soldering half a washer in the slot to serve as a purchase. By sawing a slot about ⅛in. deep across the head of a bolt and soldering a washer into it, it could be converted into a thumb screw. Files contained an excellent grade of steel that was suitable for tool maikng when handled correctly at the forge. When making a file into a tool that required forging on the anvil it should be heated to a bright red, but never worked under the hammer when the heat started to blacken it. Cold chisels should be kept ready for instant service. Where a forge was handy, they should be sharpened by heating the end to a deep or cherry red. If allowed to come to a yellow or white heat the steel would be spoilt. The end of the tool should be hammered to a smooth flat level, leaving the steel at least 1/16in. thick at the point. A feather edge could be tempered easily, and there should be something at the point of the chisel to grind after tempering. The chisel should not be heated to too high a temperature, nor should it be hammered after it cooled to a blue-black color, but heated frequently and struck with hard, square blows. Chisel edges should be kept straight and not allowed to become flared out unless a nail-cutting chisel was being made, because they were apt to break. After forging the steel should be heated to a dull red color and then plunged into water until the end was cold. It should be kept moving around and raised and lowered whilst in the water. As soon as the point was cold, but with heat still in the body of the tool, the level of the chisel could be brightened with emery paper and then allowed to cool off to the color required, and finally plunged into the water until quite cold. The color should be "stopped" at the point where experience showed the chisel to cut best at the work it was to do, but different kinds of steel required different colors of temper. Sometimes there was not enough heat in the body of the tool to bring the temper down. In that case a piece of red hot metal should be laid against the chisel. The chisel should be kept well oiled when cutting through hard metal. A handy tool rack could be constructed from a piece of 2in. by 1in. timber with some ordinary clothes pegs. A series of holes the size of the pin body could be bored in a piece of timber, and into each hole a clothes peg was driven. Finally the pins could be secured by fastening in position with a light nail. If using screws in wood that was hard the thread should be drawn across a piece of soap, and it would be found that the work could be performed more easily. The same plan could also be adopted when driving nails into hard wood. Another useful point was to bore a ½in. hole in the end of the handle of the hammer and fill it with either soap or grease, one would then always have a supply on hand. For replacing broken hammer handles the following plan was suggested:—First saw off the handle close up to the head, next, if iron wedges or nails have been driven into the end of handle, remove them with a hammer and cold chisel. Set the hammer or axe head across an opening in such a way that there will be nothing to prevent the old handle passing out, and with a hard wood drift, a little smaller than the handle and about 6in. long, with a couple of sturdy blows, drive out the old handle. The drift can usually be made from a piece of old handle. Illustrations were also given, which detailed the making of an emergency wrench, hardware cabinet, nail box, ladder, and milk stool, and an interesting discussion followed in which Messrs. A. B. Ferguson, W. A. Edge, T. G. Cliff, J. Atkinson, and A. H. Carne took part.

DOWLINGVILLE, October 28th.—Mr. H. Mason read a paper, "Handling Young Horses." In the discussion that followed, members agreed that it was advisable to thoroughly educate a young horse before putting it into the team.

PASKEVILLE, October 26th.—Mr. J. Prouse read an article, "Bulk Handling of Wheat in America," and an interesting discussion followed. Several other subjects of local importance were brought before the meeting.

WESTERN DISTRICT.

BUTLER (Average annual rainfall, 16.61in.)

September 27th.

Advantages of the Agricultural Bureau.—Mr. N. G. Stewart read the following paper:—"Under such a heading as this a member may number many advantages that he receives through being a member of some Branch of the Bureau. The Agricultural Bureau is of immense value in practically any district, the chief educational feature being not only that of teaching its members to speak at a public meeting and express their views on any particular subject, but the opportunity of exchanging ideas, thus gaining information and knowledge that perhaps would otherwise have never been brought to light. The Bureau also has the advantage of bringing its members and district in touch with the officers of the Department of Agriculture. The Advisory Board is always willing to assist with advice on any subject, and the advantage in that respect should be highly valued by the members for their own good and the general advancement of their district. Every subject connected with agriculture or stock is of great importance to the man on the land, and a member need not be a professional journalist to contribute a paper at the local Bureau meeting. The criticism of such papers is the best method of finding out the shortcomings of our views on any particular subject, and it is each and every member's duty to take part in the criticism of any paper, for by so doing they are helping the meeting, and also obtaining for themselves some of the advantages the Bureau provides for its members. The experimental farms and plots conducted by the Department of Agriculture are, in my opinion, one of the most important advantages that the Bureau provides for the man on the land, for not only do they give the farmer the opportunity of obtaining seed true to type and name, but by careful experimenting they show what varieties of wheat are most suitable for our districts. These few points I have brought before you plainly show the great help that the Bureau is, and has been, and it is quite essential and necessary that every man should be a member. If he be one of those persons who knows everything and never makes a mistake, it is then his duty to attend the meetings, and share his learnings with those who are willing to take advice for their betterment. In conclusion, let me remark that only by taking a live interest in the workings and by punctual and regular attendance, and also by recognising that each member has something to learn from the other, can we obtain these advantages, and make the Bureau the success that it should be."

BUTLER (Average annual rainfall, 16.61in.).

November 2nd.—Present: 22 members.

How to Make Farm Life Attractive.—In a paper contributed by Mr. A. Tilly on this subject, the speaker said the ideal holding should be fenced off into 100-acre paddocks, with a good supply of water in each enclosure, and possess a good house, sufficiently large for all reasonable needs. Stables, barns, sheds, etc., should be erected at a reasonable distance from the house, and there should be an acre or two allotted for garden purposes to grow sufficient vegetables and fruit for household requirements. The farm should be worked with regularity, each class of work in its season, and completed as well as possible under the prevailing circumstances. It was generally necessary to have sufficient hay and other grain and wool to defray the expenses of the farm. The writer considered that the farmer should be kind and considerate in the treatment of his employees. In the discussion that followed, Mr. C. F. Jericho said that to make farm life attractive it was advisable to create an interest in farm life by granting the employees a share or percentage of the crop and general income, for by so doing the employee and employer would have more confidence in one another, and thus stimulate the attraction to the farm.

Farm Machinery.—Mr. L. G. Parker, on a short paper on this subject, said to take care of the machinery it was necessary to have a forge on the farm, especially in districts where there were many stumps or stones to deal with, as the machinery that was on the market to-day was not sufficiently strong to stand such rough usage. If a farmer had a blacksmith's shop on his farm he could usually straighten out any strained parts of the implements. The main item in the care of machinery was to keep the nuts screwed up tightly and replace the worn out parts before a breakage occurred. One mistake that was prevalent with most farmers when working in the blacksmith's shop was that they worked the iron too cold and did not have enough fire. A paper on the same subject was read by Mr. D. C. Stewart.

Fodder Conservation.—"This is a point that must exercise the minds of every farmer who wishes to keep his stock in good condition," said Mr. A. Parsons in a paper on the above subject. In most wheat-growing districts the year could be divided into two seasons, the wet and the dry. There was only one growing season, and the long period when only dry feed was available. The chief form of conserved fodder required by the wheat farmer was hay for feeding to the working horses. For the hay crop he preferred oats that were cut when nearly ripe, on account of the nourishment that was derived from the corn. A few acres of wheaten hay cut when the crop was green was also advisable, because when it was mixed with the oaten hay it made the chaff sweeter. The hay should be stacked, if possible, after it had been in the stooks for a fortnight. Next in importance to the hay stack was the conservation of cocky chaff and straw. The former was a very useful feed for idle stock, and when mixed with bran and pollard made a good feed for working horses. A stack of good, clean straw was a good standby, and had often proved of immense value during times of scarcity of fodder. To obtain the best results from the straw the stubble should be cut as soon after harvesting operations as possible, and then carted into the stack. The report of the delegates to the Annual Congress was also received and discussed, and Mr. S. L. Butler read a paper, "The Advantages of the Agricultural Bureau."

EDILLILIE (Average annual rainfall, 18.45in.).

October 16th.—Present: eight members.

Early versus Late Lambs.—Mr. T. Knight, who read a paper on this subject, expressed the opinion that lambs dropped in that district during May did not do so well as those dropped later on in the season. Their district was a late one, as the feed did not make strong growth until about August. It was also noticeable that the hawks and foxes caused a good deal more trouble when the lambs were dropped in May and June. The young rabbits commenced leaving their burrows about July and consequently the foxes did not worry the sheep so much. In 1918 his ewes had lambed during April and May and only 30 per cent. of 200 lambs were marked. On another occasion 150 lambs had been dropped in August, and of those he had marked 75 per cent. He questioned the advisability of trying to raise early lambs in that district, for, although it was true the early lambs would give a greater quantity of wool, the difference in the numbers that one was able to bring to maturity more than repaid for the extra amount of wool that was received. He was of the opinion that hand feeding with dry chaff and oats did not produce sufficient milk in the ewes to enable the lambs to develop into well grown animals. In the discussion that followed, the majority of members favored early lambing, the most salient points advanced being, that late lambs were not so good as early ones because they had less time to grow on green feed, and were not so well grown when weaning time arrived. They also necessitated a later shearing, or else one had to allow them to stand over until next year. Mr. O. Schulze said that the losses attributed by Mr. Knight to early lambing were chiefly caused by over stocking. If no more sheep were kept than the pastures available would carry all the year round, no losses would occur. Messrs. P. L. Crawford and J. F. Carter also spoke, and both favored an early lambing.

ELBOW HILL (Average annual rainfall, 11in. to 12in.).

October 23rd.—Present: eight members.

Profitable Side Lines.—In the course of a short paper on this subject, Mr. R. Ramsey considered sheep the most profitable side line on the farm. He also advised keeping cows, and if each animal produced 12lbs. of butter each week it would, in addition to the sale of the calf, bring in about £35 per year. The speaker also suggested rearing a couple of foals each year. He strongly emphasised the need for keeping a good class of stock of all descriptions. Mr. Wheeler also contributed a paper on this subject. He was of the opinion that pigs were the most profitable side line for the farmer, but cows and fowls should also be kept on the farm. Sheep, he considered, could not be regarded as a side line, they were one of the mainstays of the holding. Only sufficient cows should be kept as were necessary to keep the household supplied with milk and butter. The products of the pig always brought a good price. The animals were very prolific breeders and if allowed plenty of pasture they could be raised at very small cost. In the discussion that followed, Mr. P. Wake thought that sheep were the staple industry of that district. Mr. E. Story did not advise breeding too many horses, because their district was subject to drought. He advised paying attention to poultry and sheep. Mr. G. Wake spoke in favor of keeping a draught stallion as a profitable side line. The Hon. Secretary (Mr. P. G. Wheeler) said farmers were only just waking up to the benefits that were to be derived from the keeping of a few paying side lines on the farm. Over a period of twelve months he had cleared £100 from his pigs.

KOPPIO (Average annual rainfall, 22.40in.).

September 30th.—Present: 10 members.

Woolclassing for Farmers' Lots.—In a paper dealing with this subject, Mr. W. R. Richardson said the object of woolclassing was to put the different kinds of wool up into such lots as would suit the requirements of the different buyers and give them the best opportunity of estimating the true value of the wool. Farmers should recognise that by simply placing all the fleeces into a bale without any skirting or classing was detrimental to their own interests. Burry wool was a source of great trouble to some manufacturers, and if burry pieces were left on the fleece the buyers would naturally avoid the purchase of such a clip. Some of the buyers would not even trouble to look at an unclassed clip, and such clips were often bought by local speculators who sold them and made the profit that should be going to the grower. On the other hand, if a buyer knew that a certain clip was always carefully and honestly classed he would make a confident valuation at the highest figure possible. The first operation in shearing was to take the belly of. It should be picked up and, if from a wether, the stained pizzle piece taken out and put aside to be dried. The belly should then be examined and all greasy edges and short wool on the brisket removed, leaving a piece of wool of an even type which could be put into a bale or bin and kept separate from the other wool. As soon as the fleece was thrown on the table it should be spread out so that the ''skirter'' could readily see what to take off. Skirting did not mean simply tearing a strip of wool off all round the fleece, but the removing of such pieces as were inferior or likely to spoil the value of the fleece. All heavy, greasy, and sweaty pieces should be taken off as well as any matted pieces and seedy or burry parts. There was no need to take a lot of skirt off so long as all the inferior wool was removed. After skirting, the sides should be folded over and the fleece rolled into a neat bundle; the rolling being done from the breech towards the shoulder. For a small clip the object was to make as few lots as possible. By doing that one was able to avoid having too many ''star'' lots. At the same time, it should be remembered that it was an unwise policy to mix different classes of wool. As soon as the fleece was rolled the strength of the staple should be tested. If it was sound, and would stand a fair strain and not break, it would be classed as combing wool, and should be kept separate from the tender wool, as it could not be dealt with in the same way. All the brightest and longest of the sound or combing wool would make the first or A.A. lot, the heavy, greasy, or yellow fleeces being taken out and placed in a separate bale. The same applied to the tender wool. The skirtings or pieces of the fleece should be picked over and classed into two lots —first and second pieces. The first pieces should consist of the lightest and brightest of the wool, and with care these could be made into an attractive line. The locks should be baled separately, and all stained pieces dried before being packed. The lambs' wool should not be packed indiscriminately into a bale. A cloth should be laid over the rolling table and the wool laid on it, and any short or sweaty, heavy pieces taken out and packed separately. If an extra short woolled lamb came along its wool should be classed with the second lot.

SMOKY BAY.

October 23rd.—Present: 15 members and one visitor.

The Engine on the Farm.—"The engine plays such an important part in the work of the farm that no farmer can afford to be without one," was the opening remark of Mr. L. Barlow in a short paper on the above subject. The speaker thought the oil engine the most economical, but an engine consuming petrol was much more convenient. It could be used for numerous jobs, such as winnowing, chaffcutting, crushing, pumping, &c., and in the majority of cases could be relied upon to do a good day's work. Messrs. Barlow Bros. tabled wheat plants affected by disease.

WUDINNA.

October 16th.—Present: 11 members.

Hay Making.—In a short paper dealing with this subject, Mr. W. P. Bartley considered the best wheats that could be grown in that district for hay were White Tuscan, Yandilla King, and Baroota Wonder. For oats he suggested Calcutta, Cape, Algerian, and Mortgage Lifters. Algerian oats should not be cut for hay until that had commenced to show signs of ripening. The hay should not be stooked too soon after being cut, but allowed to season in the paddock; neither was it advisable to put any wet sheaves into the stack. If the carting was done in hot weather he suggested sprinkling about 2galls. of salt water over each layer of sheaves as they were laid in the stack. If sulphur was sprinkled over the edges of the bottom sheaves it would prevent mice from attacking the hay. A long and interesting discussion ensued.

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YADNARIE (Average annual rainfall, 14.09in.).

October 27th.—Present: nine members.

Stack Building.—Mr. T. H. Weiss, who read a short paper on this subject, said the first thing to do after the hay yard had been cleaned out and the dunnage laid down was to set pegs in the ground to indicate the dimensions of the stack. The walls should be so constructed that they would prevent water from getting into the hay. The stack should be kept level until the eaves were reached, when the centre should be made at least 4ft. higher than the walls. The speaker thought a roof built with the heads facing outwards would keep more rain out of the stack than one built with the butts projecting outwards. In the discussion that followed, Mr. O. Forbes did not favor building the roof with the heads of the sheaves facing outwards, because during a wet winter the grain would grow and spoil the whole of the sheaf. He expressed the opinion that a thick layer of straw was the best dunnage, because mice would not have so much chance of getting into the stack. Mr. F. W. Jericho thought the best plan to adopt to keep the mice out of the hay was to place galvanized iron on the ground around the walls of the stack. The Hon. Secretary (Mr. J. H. Kruger) also favored the plan of building the roof with the butts facing outwards. If possible, he suggested choosing a cool day for roofing the stack, because one could then give the sheaves plenty of slope without fear of them slipping. If the stack was to be kept through the winter a thick layer of straw should cover the roof. The delegates to the Annual Congress and Minnipa Conference gave an interesting report of the proceedings at both gatherings.

YEELANNA.

October 23rd.—Present: 12 members and visitors.

Sheep Dipping.—In the course of a short paper dealing with this subject, Mr. S. Wilkin suggested the construction of a dip about 70ft. long by 5ft. 6in. deep A strong, straight drop into the dip should be made at the entrance, but for the outlet a ramp with a good slant should be made. Draining pens should also be provided for the sheep. It was also necessary to provide adequate yarding accommodation, and to frequently clean the dirt out of the dip. A short discussion followed. The report of the delegates to the Annual Congress and the Minnipa Conference was then received.

CLEVE, October 26th.—The report of the delegates to the Annual Congress was received. A discussion on the local field trial then took place.

LAKE WANGARY, October 23rd.—Mr. A. E. Hawke contributed a paper on "Co-operation," and an interesting discussion followed.

PETINA, September 25th.—The Annual Report of the work performed by the Branch during the past 12 months was presented by the Hon. Secretary (Mr. W. L. Schulz), and the officers were elected for the ensuing period. Several other matters of local interest were also brought before the meeting for discussion.

WARROW, August 4th.—Messrs. S. A. Puckridge and J. G. Cowan were chosen as delegates to represent the Branch at the 1920 Annual Congress. At a further meeting, held on September 4th, the subject, "Marketing Wheat," was brought before the members for discussion.

WUDINNA, October 30th.—Several matters of local interest were brought before the Branch, and members also discussed the question, "The Continuation of the Wheat Pool."

EASTERN DISTRICT.

(EAST OF MOUNT LOFTY RANGES.)

BARMERA.

October 27th.—Present: All members.

ORCHARD WORK.—Mr. W. R. Lewis, of the Berri Branch, attended the meeting and read a paper on the subject "Orchard Work: First Year's Preparation and Care." The paper was as follows:—"In trying to outline the work that an orchardist will be called upon to do during his first year, so much depends upon making a start correctly on right lines, that a little time spent in discussing land preparation may not be wasted. The varying qualities of the soils on these river settlements only serves to emphasise the fact that what might be a success on one block would not be nearly so successful on another, and might even prove a total failure; hence the necessity for great care in planting and in the preparation of the land. If the land happens to be of a heavy nature on the surface, or if the subsoil is of a clay that is impervious to water, or of that peculiar grey marl that is common along the higher levels, that are of a limestone nature, it will pay to subsoil. You must make sure of drainage, for although you may have a foot or so of good soil, yet if it overlays subsoils of the nature I have endeavored to describe, under irrigation it will soon become waterlogged, and seepage will be annoying you. To subsoil such land, I know, is an expensive job. If the land has been timbered, it must be carefully grubbed, so that the subsoiler will work to at least 18in. in depth. The question of subsoiling, however, is too great to be mixed in a paper of this sort, and is worth having an evening devoted to it, but I am sure it will pay to specially prepare some of these lands before planting them. If you are fortunate in securing a block with, say, 4ft. 6in. to 6ft. of fairly good sandy loam, the depth of ploughing does not count for so much, but I would always advise deep ploughing even in such soils, say, 6in. to 8in. See that your grading is correct, not too steep, nor on sandy soils too flat —just sufficient to let the water move along without rushing. Remember it is a most important point to have the land in such a condition that you can irrigate it with little personal exertion. Irrigation can be a pleasure or it can be hard labor. If mistakes are made at the start it is difficult to change the system of watering after the land is planted, and a wrong start may be a tax on your efforts all your life, so be very careful that the lay-out of the channelling is correct, and the run of the water not too long. It is almost impossible to lay down a grade that can be generally adopted, for you must consider the nature of the soil. The more sandy the land the more rapidly will it absorb water, and the fall on such lands will need to be much greater than on a firm soil. Perhaps in sandy soil a fall of 9in. to the chain would not be too much, providing the stream was fairly large, so as to reach the end trees as quickly as possible without washing out the furrows and spreading the water across the rows. If this latter happens it will be laying the foundation for seepage. On firm lands that will not wash, a fall of 1in. to 2in. to the chain will answer the purpose. I know that on these settlements the blocks are generally planted for you, and no doubt, on the whole, well done; but I have found that there is nothing equal to the personal interest to secure the best results, even in the laying out of an horticultural block, if it is backed by experience. On the whole, it is advisable to do as little grading as possible, consistent with obtaining a good watering. Better a little more channel than a lot of surface removal. If you take the first 6in. of soil from a given place it will take years to get the same growing qualities into the remaining soil. When the land is ready for planting, consideration should be given to what nature of crop the land is best fitted to produce. If you are not an experienced man, consult someone with a knowledge of the work. There are competent men in the department, and I can personally recommend Mr. Savage. Do not plant oranges on land only suited to pears, or peaches on land only adapted to vines. So many beginners have done this, and it is far from encouraging to find you have wasted four years for very little result, when you badly needed a quick return. If you decide on deciduous trees, do not imagine that because they have a dormant season they will stand all sorts of exposure. Keep the roots damp, and covered from the sun until the trees are in their places in the orchard. Plant at same depth as the trees were in the nursery. Water, if possible, at the same time, as it sets the soil better around the roots than any amount of tramping. It is, of course, essential that the trees shall be planted in as straight lines as possible, and to secure this, all blocks should be pegged out and a planting board used. In planting vines, the planting board can be dispensed with, but take care to have the rows straight. It makes a lot of difference later on when ploughing and cultivating. Take particular care of the young orchard when irrigating. See that for the first year at least the water gets quite close to the young tree or vine, for its spread of root is only small. Later on, when the roots have spread, close watering is not essential. One of the troubles facing a new blocker is drift, but under irrigation it can generally be overcome with only a little loss to the blocker. On nearly all sandy soils a cover crop is needed to prevent the first year's drift. Leave room to work the cultivator up and down the rows of trees and vines, and keep this part well and deeply cultivated. Use the hoe frequently around the base of both vines and trees, keeping the soil loose, destroying weeds, and disturbing the homes of cutworms, which destroy the first year's buds, and make it so difficult to form the trees into a nice shape. A constant watch must be kept for these pests. Constant hoeing and cultivation will generally keep them within reasonable bounds; if this is not successful, bandaging the stems with fur, or poisoning with paris green, will help. If you have time, try to form your trees so as to get three or four arms to start with. If the growth is good, you may pinch back at about 9in. to 1ft., thus causing the sidebuds to spread and form a tree of perhaps eight arms in the first season. If you do not succeed, cut back to about 9in. in the winter, and so secure the required arms in the next spring growth. With vines do not cut away all the growth to one arm. The first year there is a danger of stopping the general growth if you destroy too many side leaves. The young vines require the leaves, as breathing is as necessary to them as to us. When the time comes for pruning the vines, have perfectly straight growth running strongly above the required height of the trellis wire, so that when you cut it to the required height, you have well developed buds and strong wood. I would leave it, and place on the wire from first year's wood. This plan, however, requires knowledge, and is very likely to be abused. A man is apt to imagine that the vines should go on the wire as soon as they will reach that position, hence, vines that have weak stems are often wrongly placed, when they should have been pruned back to a couple of buds and brought up to the wire on the second season's growth. As a broad rule, the wisest course to follow is to prune the vines back to a couple of buds the first year and get them on the trellis as soon as possible on second growth. If buying your trees, get them from a reputable nurseryman. Be sure of what you want to plant, and do not get the wrong plants just because you wish to fill up the land. Many of our early settlers had to rework and replant a large portion of their orchards through not being careful in selecting, or through being duped by dishonorable nurserymen. In the first year's planting may come the selection of household fruits. Do not overdo this. Secure a wide range, getting the fruit over as many months as possible, but do not get more than a tree or two of each variety, or in six or seven years' time, when these trees are carrying eight to ten cases per tree, you will hardly know what to do with the home fruit. The first year will be one of hard work and constant care and cultivation, but it lays the foundation of easier times in later years, that will, if persisted in, more than repay you for your anxieties and labor. In the discussion that followed, the Secretary (Mr. F. V. Burchell) asked Mr. Lewis to give a brief description of the class of soils and depths suitable for various citrus and deciduous trees and vines grown in the district. Mr. Lewis said that the peach and apricot required a fairly deep and well-drained soil. They should never be planted over a marl, limestone rubble, or limestone subsoil. Apricots would not stand seepage. For pears, apples, and prunes, heavy firm soil of good depth was recommended. All citrus trees required a good soil, of at least 4ft. to 4ft. 6in. Vines would grow on almost all good shallow soil, the amount of stone not making any appreciable difference to the vine—yet quite a difference to the settler and subsequent cultivation. Mr. Lewis, on being asked for the hardiest vine, spoke in favor of the currant and Doradilla. Mr. Martin inquired of Mr. Lewis what he would plant if he were taking up a soldier's block, with an area of about 15 acres. The reply given was as follows:—6 to 8 acres of sultanas, 2 to 3 acres of currants, 1 to 2 acres of Gordos, and if the soil was suitable, 50 to 60 trees of apricots. That would be just as much as a man and his family could handle without employing outside labor. Mr. Pullin inquired what Mr. Lewis thought of the question of fresh fruit versus dried fruit in this area, taking into consideration a railway system being laid down in the near future. Mr. Lewis thought that the whole of the areas along this part of the Murray were particularly adapted to dried fruits, and he could not see that fresh fruit would in any way compete with them. On being asked which peach was preferable for canning, Mr. Savage replied that the freestone was for drying and the clingstone for canning. The latter had a tougher skin, and consequently it could be better handled and the different varieties could be spread over a longer period of ripening, so that the canning works would have a more regular system of working. In reply to a question as to what was the better windbreak, olives or almonds, Mr. Lewis thought almonds were the better windbreak for the young orchard in that area. Mr. Savage also spoke in favor of almonds, and gave IXL and White Nonpariel as the best varieties. The olive was good, but took a long time to bear, but there was certainly a good market for olives.

BERRI.

October 25th.—Present: 38 members.

Rack Building.—Mr. L. A. Chapple read a paper in which he advocated the use of movable tiers and iron roofs. The paper was as follows:—"In these days of high prices for land and material, conservation of space and utilisation of same should not be lost sight of. Therefore one should endeavor to build his rack in such a way as to get as much fruit as possible on to as little space as possible, and after the fruit is taken off be able to convert the rack into a much needed shed for a drying plant or implements. That is why I advocate building a rack with movable wires or tiers and putting on it a permanent roof; galvanized iron for preference, but palings would do. Canvas covers are expensive and although they prove unsatisfactory to use for the short drying season, I would not recommend using them for a rack built to answer the purpose of a shed outside the drying season. It is a mistake to have a rack too long, as much time is wasted getting from one side to the other. The length of the rack should be 60ft. or thereabouts, posts to be 8ft. to 10ft. apart. The width should be 5ft. 6in. between the posts, to allow for 5ft. netting and a side stretch. The height should be 7ft. or thereabouts. The posts along one side to be 1ft. higher than those on the other side to allow for a skillion roof. The corner posts should be of round timber, at least 10in. in diameter at the small end, and if possible set deeply in the ground several months before the rack is to be used, to allow for the ground to set. The corner posts should be 3in. higher than other posts, to allow the top railing to butt against them. The intermediate posts should be of sawn timber, not less than 4in. x 4in. jarrah or gum. All posts should be stayed across the top with timber 2in. x 4in., jarrah or gum for preference, and securely bolted or wired, on top of which will be placed the top tier of netting, which will be the only fixed tier in the rack. End cross bars must always be 3in. x 3in. Not less than 3in. x 3in. jarrah or stringy should be used to stay the rack from end to end. This should butt against the corner posts and be securely wired on the tops of all others. This timber will do away with strutts or tying back to butts, which is always a source of annoyance when working about a rack. But on this timber will come the greatest strain, so care should be taken to have good timber. Holes should be bored in the post to take pins to support the wirenetting tiers. Five-inch wire nails will do for the end posts, as no weight other than the piece of wood they support will come upon them. But the intermediate posts should be pegged with stout iron nails, or ⅜in. round iron. The end cross bars should be made of not less than 3in. x 3in. jarrah or stringy bark. The intermediate cross bars of timber 1in. x 1½in., and should be the width of the rack; outside measurement. Into this should slantingly be driven stout nails, which are left ½in. high to hook the wire on to to get the side strain. A saw cut can be used for the same purpose. These cross bars are placed on top of the pegs in the posts and can be easily moved. The netting should be 2in. mesh, and fastened to the cross bars at one end and to a separate cross bar inside the posts at the other end. No. 10 galvanized wire is used to support the netting. The two wires on the outside to be threaded through the netting with two in the centre for support. Small roller strainers should be used at the end for straining. These should be used on short pieces of wire fastened to the inner cross piece and passing through the outer and cross piece to ensure an even strain. The bottom tier of netting should be 14in. from the ground, and the top tiers 14in. apart; and all other tiers 9in. or 10in. apart. When in use, the bottom tier should be lowered and strained, and filled first; the others lowered as required. When the fruit has been dried and taken off, the wires should be slackened, the intermediate cross bars removed, and the end cross bars pushed up to the top of the posts; after which a couple of intermediate cross bars can be used for supporting all the wires well up out of the way. I favor having two such racks built side by side with a gangway between, say, 5ft. wide, the inner post in each case to be the longest. The gangway can then be roofed in as well, and a most useful rack can be converted into a cheap and much needed shed. Of course, if racks only are required all posts can be the same height and canvas covers used in the ordinary way. Or three racks can be built side by side with narrower gangways, and a shed roof built over all. In this case I would not advise using the rack post to build the roof on, but have, as it were, three racks with a shed built over them. To take the fruit off the rack use the back of the prongs of a pitch fork, and rub all the fruit through on to the hessian.''

Rack Building.—Mr. E. J. Moritz also contributed a paper on this subject, and spoke in favor of fixed tiers and canvas covers. The paper was as follows:—''I have built three racks of different dimensions, one with 5ft. netting, three tiers, one 6ft. netting and four tiers, and one with 6ft. netting and six tiers, 100ft. long, and I can recommend the last-named as being economical in many ways. The holding capacity is 1,000 tins of sultanas and 1,200 tins of currants. The material required for building a rack 100ft. long, 6ft. wide, and six tiers high would be as follows:—Two posts 12ft. long, about 7in. at the small end; four posts 10ft. long, 7in. at the small end; 18 posts 8ft. long, 6in. by 3in. at the small end, split gum or box or sawn timber; one 16ft., five 15ft., 4in. x 3in. sawn red gum for the ends to strain from; five 16ft., twenty-two 14ft., 3in. x 2in. red gum or jarrah for the cross bars; 200yds. 6ft. 18 gauge by 2in. mesh galvanized wire netting; three coils No. 8 gauge galvanized wire; six bolts 10in. x ½in. for bolting top bar (4in. x 3in. red gum) to end post; 18 bolts, 6in. x ⅜in., for bolting top bar to posts; 100 nails, 4in. and No. 6 gauge, for nailing cross bars to post; 12 rails of 6ft. 6in. x 3ft. round mallee for fixing wirenetting at each end; two posts, 7ft. 6in. x 4ft. round mallee, for fixing wirenetting at each end; two posts 7ft. long, about 10in. at the small end to strain from; 60 wire strainers. I would commence to build the rack by setting one line a little over 100ft. long and work at right angles from the line. Start with the end post, first putting the outside end post up, digging this hole 3ft. 9in. deep and the centre 3ft. 6in. deep. When you have the six end posts up, strain a line top and bottom and then start to put up small posts in the centre, 10ft. apart. Make sure your line is fixed on the inside of the end posts. Before you put up the small posts notch out for the cross bars, starting from the top, leaving 2in. above the top rail for fixing the wire netting to, then notching out every 12in., making the top rail the starting point. Then dig the holes 1ft. 10in. deep for the small posts. Fix all the cross bars next, leaving the top bars over-hanging 6in., to take a No. 8 galvanized wire for the side for hanging side curtains and fixing top cover to. Then dig a trench 12ft. behind the end post, 4ft. deep, large enough to take a post 7ft. long and about 10in. at the small end. Then dig an inclined trench towards the end posts, so that there is a clearance when you stretch a line from the top of the end post to the bottom of the trench. Then run out enough No. 8 galvanized wire to go around the post in the trench and the top of the end post three times and make fast, using a mallee stick to twitch in the trench and ram very tight. When that is done tighten up the wire until you pull the end post 6in. out of plumb. Next, a start can be made to put the centre wires for taking the wirenetting. Run three No. 8 galvanized wires on the bars to support the netting, make fast one end and strain the other. Then run the 6ft.-wirenetting, fixing in two mallee rails 6ft. 6in. x 3in., and making fast one end, straining the other. Then thread one No. 8 galvanized wire in the side of the netting and through the posts, starting from the centre and working each way until the end post is reached. Then strain from both ends with strainers, but not too tightly, until you have the same the other side. So you go on until all the tiers are completed. Then run a No. 8 galvanized wire from the end centre post, about 2ft. 6in. higher than the top tier, supported with three uprights, that will act as a ridge for the cover. A vote taken after the reading of the paper showed that the majority of members were in favor of fixed racks, with 5ft. netting and 100ft. in length.''

CLAYPAN BORE (Average annual rainfall, 16in. to 17in.).

October 25th.—Present: seven members and visitors.

HARVESTING.—In the course of a paper dealing with this subject, Mr. G. McCormack said one of the main difficulties of the average farmer was to prevent the hay harvest from interfering with the gathering of the wheat, but if early wheats and oats were sown for hay he believed that trouble would be overcome. The crops should be closely watched and every source of power brought into force so soon as the crop was fit to reap. The wheat reaped with the harvester should be sewn up directly after the machine, for if the bags were left unsewn in the paddocks for any length of time the birds would scratch a good quantity of grain out of the bags. He thought the use of the harvester was the most economical means of garnering the crop, but he also realised that when that implement was used one lost the cocky chaff, and in order that at least a portion of it might be conserved he suggested working one stripper through the harvesting operations. The best plan to adopt when wheat on sandhills had to be reaped was to first drive the machine along the top of the hills and then work towards the bottom. A interesting discussion followed, and the report of the delegates to the Annual Congress was received.

GLOSSOP.

October 27th.—Present: 30 members.

CULTIVATION.—The following paper was read by Mr. W. G. Morrell:—''Cultivation is one of the most important points in the working of a fruit block. Especially does this apply to the Murray Valley, where water is available only at intervals of five or six weeks, thereby making it necessary to conserve as much moisture in the ground as possible to provide an even growth for trees and vines right through the summer months. There is nothing more likely to retard the growth of young trees and vines than pouring on a lot of water and allowing the ground to set down hard afterwards. To avoid this it is necessary to apply a system of cultivation. I use the word system because, like everything else to be successful, cultivation must be applied systematically. It is, or it should be, the aim of every blocker to produce the very maximum of production on the minimum of water. To do this it is necessary to cultivate and keep on cultivating, for by this means only can the moisture be kept in the ground. One of the secrets of good cultivation is a thorough ploughing during the winter months, when the ground is usually in a workable condition. Do not be afraid to work the land deeply, you will not over do it. This is a very important point where the land is of a stiff and heavy nature. Ground well broken up in winter or early spring to a depth of from 8in. to 10in. will be found comparatively easy to keep in good heart through the summer months. Evaporation of moisture through the action of wind and sun can to a great extent be avoided by creating a fine dust mulch on the surface. By this means the moisture is kept down from the surface. The writer has found the harrow to be the best of all implements for this purpose. For retaining the moisture from one irrigation to another, it will be found a good practice to cultivate as soon as possible after watering, to follow the cultivator with the harrows and keep the implements going as much as possible

IRRIGATION.—Mr. E. R. Moss, of the Berri Branch, attended the meeting and read the following paper:—"In land such as we have to deal with, it is advisable, on the heavier class of soil which has a steady grade, to have the rows not more than six chains long. If the land is on the light side, four chain waterings will be long enough. In laying out the block always study, first, the class of soil you have to deal with, and even if it takes more channelling to get these shorter lengths of rows, it will pay in the long run, because channels are cheaper than putting down drainage pipes, which will be absolutely necessary if you wish anything to grow on land that has become seeped. In watering steep slopes, unless it is absolutely impossible, water across the slope and not straight down it, because in running water down hill the top soil always washes and is deposited three parts of the way down the slope. This fills the irrigation furrows, and the water spreads across the rows instead of running to the bottom, and seepage trouble will soon develop in such places as these. In watering across the slopes the water can be regulated to a nicety, and somewhere about the quantity of water required can be applied. As is often the case with these slopes terminating in a flat, the trees on the flat and the trees on the top of the rise require water applied directly to them in greater quantities, because the land half-way down is getting the drainage from the land higher up, which is often sufficient for whatever is planted there. Therefore, if watering down these slopes it will be necessary to run the water on this land to water the flat at the bottom, but if the channel is made across the slope any particular part can be watered. The first thing to do when advice is received that water is available is to thoroughly clean all rubbish and sand out of the channels. Then commence furrowing out. Do not leave this to the last moment and try to irrigate and

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furrow out at the same time. The whole of the blocker's attention should be given to the irrigating, for it is quite possible, if it is left to go on with furrowing, you will come back and find the water is not flowing or is running where it is not required. Again, do not complete the furrows too long before the irrigation, because opening out a furrow alongside of the vines gives a bigger and deeper space from which evaporation can take place. The furrowing out can be done with the plough and with a buster on the cultivator, and where two furrows are required, such as with bearing vines or trees, two busters can be attached to a two-horse cultivator. In furrowing out for young plants make the furrows about 6in. from the rows on either side, being sure to make the furrows deep, so that they will not be continually breaking away. When the furrowing out is completed, make up the connections between the outlet and the furrow. When that is finished everything is ready for the water. When taking the water do not be frightened and only take a very small stream. If that is done it will simply be waste of time and water, because more water is put on the land by running a small stream. Each individual soon becomes acquainted with his block and knows about how much water he can comfortably manage. In taking the flow of water from the outlet, try and regulate the water so that it reaches the ends of the furrows somewhere about the same time, and also endeavor to keep the water together, *i.e.*, do not have water on one part of the block and another stream on another, as that means more walking about. The size of the stream to run in the furrows depends on two things, first, if the land is steep and a quick stream is turned on the soil will be washed away. The slower the stream the more water will wash into the land, so that the blocker must use his own judgment in this matter. But on no account should the land be over watered. No bad results may be noticeable for a year or two, and it is possible that the vines will make excellent growth, but it is going to tell later. I do not like the practice of watering rows of fodder between rows of vines because, in my opinion, too much water gets into the subsoil, which soon become waterlogged. Only put on just the water that is required, which is less for young trees than for vines in bearing. One of the best plans to adopt in watering young trees and vines is to go along the rows while the water is running and cut the water into each vine or tree, as the case may be, with a shovel, so that the water runs up against the young plant. Otherwise, as is often the case, and especially in mallee soils, the water does not soak to the roots of the young vines, with the result that they die or do not make a strong growth. This entails more work, but will pay handsomely. See that the water does not burst away from the furrows and flood the land between the rows. This is only a waste of water and a danger, not only to yourself, but also to your neighbor if he happens to be on a lower level. When watering is finished ask the channel man to shut off. Do not keep it for another day just to make sure that the land has been soaked. This is not only dangerous but selfish, as your neighbor very probably has his furrows open and waiting for the water. I would like to earnestly request all the settlers to do with as little water as they possibly can. This will not only benefit you, but the whole settlement, as there is a large area to get over this year, and the pumping plants will be taxed to their utmost to keep the water regularly supplied to the grower. Not a soaking now and nothing for two months, but a regular supply. There is nothing to be frightened of if each blocker only takes the actual quantity of water that he requires. *Cultivation.*—After the irrigation is finished allow the land to dry out just sufficiently so that the implements will not become bogged. When the soil crumbles up on coming into contact with the cultivator can be taken as a good guide. Do not leave the furrows open longer than this, because evaporation is continually taking place through capillary attraction. The finer the soil is broken up and the greater the depth of cultivation the less is the evaporation of moisture, so if time is available it would pay to cultivate twice after each irrigation as deeply as possible. If you cannot cultivate twice, then harrow the land well after the cultivation. It is a good plan to harrow even if the land has been cultivated twice. The furrow that has been cut into the vine with the shovel should, after cultivating, be well worked up and filled in with a fork hoe, and the land should be thoroughly worked all around the vine to stop evaporation from the roots. It is the practice to grow cover crops of wheat between the rows of young vines during the winter, because it stops the drift and supplies fodder for the animals; but if drift is not bad the land, after this crop has been removed, should be thoroughly worked up, because the soil is dry and acts like a sponge on the irrigated rows alongside and draws the moisture away from the plants. If these strips of land are worked up the moisture soaks into them at the first irrigation and is conserved. Nothing should be planted between the rows after the second year unless drift is very bad, because in the third year vines and trees have their roots well across the rows and should be carrying fruit, and will therefore require all the cultivation they can get. *Vegetable Garden and Lucerne Plots.*—These are plots which each blocker should have on a small scale, but I should like to sound a note of warning: be careful where you put them, not actually for the sake of the plots themselves, but for some other part of the block, or your neighbor's. Vegetables and lucerne take a lot of water. Lucerne requires flooding and vegetables need plenty of moisture near the surface. To do this continual irrigation is necessary, so it is advisable to have these plots where the draining water is not doing damage anywhere else. Every settler must use sound judgment in irrigating his block. Water lightly where little water is necessary, heavier if required in other parts, but do not over do it, and cultivate well and often, especially after rain. If that is done there will be no trouble with seepage, and it will not be necessary to raise the water rates.'' An interesting discussion followed, and the writer of the paper replied to the numerous questions.

LAMEROO (Average annual rainfall, 16.55in.)

September 25th.—Present: 16 members.

Sore Shoulders.—Mr. E. F. Davidson, who read a paper dealing with this subject, said to keep a horse's shoulders sound the most important point was to keep the animal in good condition. When a horse started to lose condition it was only natural that a collar that was previously a good fit would, with the loss of flesh on the shoulders, become too large, and unless care was exercised the horse would soon contract sores. In order to avoid such a happening the horse should be worked with discretion, and according to the manner in which it was being fed. Good results would not be secured from the team by simply stuffing them with large quantities of hay chaff. Concentrated foods, such as oats, bran, and pollard should be added to the bulk of the chaff. If at any time the collar became too large for the horse, and it was not convenient to have it stuffed, the lining should be opened, and a bran bag used to fill it out until it reached the right size. If one particular horse's shoulders were constantly getting sores on them he suggested taking the horse, with the collar, to the saddler, and allowing him to examine them. The main point was to keep most of the pressure as close to the neck on the shoulders as possible. If the shoulders became sore through the collar becoming flat one should not cut a hole in the collar, but undo the stitching of the lining of the collar and place more hair on the inner side of the collar. Prevention was better than cure, and if the farmers would only see that the shoulders of the horses were properly groomed and the collars kept free from dried sweat and grit, much would be done to prevent the horses from having to be thrown out of work on account of sore shoulders. For hardening the skin a solution of salt and water or bluestone water was suggested. In the discussion that followed, some members advocated new collars for young horses. Others preferred to soak the collars in water, and then work them on the horses to pull into shape. One point mentioned was that the hames were a very important item, and that they should fit the collar well. The draught should be kept well up, and not allowed to work down towards the point of the shoulder.

PINNAROO (Average annual rainfall, 16.74in.).

October 22nd.—Present: nine members and visitors.

Homestead Meeting.—The monthly meeting of the Branch was held at Messrs. F. H. Edwards & Sons' homestead. The vegetable garden was greatly admired, and members noted with interest the methods adopted to secure such excellent results. The experimental plots being carried out on the farm showed good growth. That plot treated with 138lbs. of super appeared to be the best. An area of field peas treated with standard super also showed up to advantage. Two members of the Branch gave a favorable report on the appearances of their crops on sandy soil that had been treated with a dressing of lime subsequent to seeding. Afternoon tea was provided by the ladies of the homestead.

POMPOOTA.

October 20th.—Present: 30 members.

The Management of a Swamp Block.—The following paper was read by Mr. A. S. Martin:—"The question of how best to manage a swamp block is one that, in reality, can only be learned by experience, because swamp land differs materially in different sections of the river frontage. When the Monteith area was first allotted, the heavy land adjoining the river was thickly matted with rushes, and the peaty land was a dense thicket of reeds, and the land was heavily waterlogged. After a little experience we soon realised that the only implement to root out the rushes and reeds was the pick or mattock. With the rushes out of the way, a strong, single plough with disc cultivator proved to be the most effective means of cutting up the soil. We were advised to plough very shallow, 2in. to 3in. at the most, as the ground was sour. However, I think most of the land was worked well over 4in. deep, and in many cases 6in. and over, as that was the only hope we had of keeping the plough in the ground, and results proved that 6in. ploughing in the heavy land was not any too much. The soil turned over in almost one continuous slice, and the question then arose as to the best means of getting it down to a fine tilth for lucerne growing. Disc cultivators, disc, spring tooth, and ordinary peg tooth harrows all had their votaries, and I think each implement did some good service, but from experience I think it is best to leave the newly ploughed land for a few days to the action of the sun and air, when the use of the old-fashioned peg-tooth harrow (weighted down) will in a few operations complete the job. The heavy land close to the river is the best for lucerne, but a very important work remains, in most cases, to be done before sowing the lucerne seed, viz., grading and levelling. In many instances the land near the river is very uneven, and as the lucerne only requires replanting in from 7 to 10 years, you will recognise the necessity for having such land right for irrigating from the start. Grading is rather a tedious proposition, but to the owner of the land it is a very interesting work, and he knows he will derive the advantage of it in future years. Roughly speaking, the river seldom falls below the 106ft. level, and most times of the year you can irrigate at the 107ft. level. This level is, I think, a safe one for the lucerne ground that is not higher than 107ft. and graded down to, say, 106ft., 15 or 20 chains back from the river frontage. By starting the irrigation flow straight from the channel or pipe at the 107ft. level you will have a nice flow down to the end of the lucerne. Lucerne will not grow satisfactorily on the land below the 106ft. level. Grading should be done by finding the levels. This the surveyors of the Irrigation Department will do and place the pegs for you, so that you know exactly how much has to come off or go on, as the case may be. A 7ft. scoop and four good horses will do the work. Some farmers prefer to have their lucerne land terraced thus, the first section, say, up to 108ft., the next 107ft., and next 106ft. Personally, I do not favor this system. Certainly it means less work, as you do not have to haul the surplus soil so far away, but, as against that, one can usually make up more lucerne land by extending the 106ft. level, and then, in the event of a low river when you can only soak the lucerne ground from the drain, the 108ft. plot will be very likely to go off for want of moisture. In most of the river swamps there are three distinct classes of soil, first there is the heavy black soil close to the river very rich and fertile, then there is the loose peaty soil, and thirdly the lowest, somewhat sodden soil, usually found in what is inelegantly called the "gut" of the swamp. This latter will probably take some years of cultivation and coaching before it becomes good grazing or crop-growing land. Heavy dressings of agricultural lime make a wonderful difference. This class of land is heavily impregnated with salts and will not grow anything for the first year. Cultivate it and leach it at every opportunity, plough in stable and cowshed manure, and harrow in heavy dressings of lime. The second year you will probably be justified in sowing Algerian oats or Cape barley early in March. Drill in with, say, 30lbs. to 50lbs. of super and you will probably get fair grazing, but do not expect much until after the third year, when your efforts will almost assuredly be crowned with success. The peaty land is usually good and fairly sweet, but it is of such a light and fluffy character that it is difficult to get germination of the seeds sown. After cultivating, this land should be heavily rolled and then irrigated. This will tend to solidify the soil, and then, when dry enough, drill in Algerian oats with a dressing of super, 30lbs. to 50lbs. to the acre, drag some boughs behind the drill to cover up the seeds, and when the oats are up, say, 3in. or 4in. roll heavily again, and in the absence of good rain irrigate a second time. The rolling tends to make the roots stronger, and the cattle do not pull out so many plants when grazing. The heavy soil next to the river is possibly the richest soil, not only in Australia, but in the Empire. This heavy land is by far the best lucerne land on the swamps, and if properly sown with the best seed good results are certain. Get the soil down to a fine tilth, that is, of course, after levelling and grading has been completed, and then irrigate. As soon as the land is sufficiently dry to allow working, drill in 15lbs. of the best giant leaf Hunter River seed with from 180lbs. to 200lbs. of super to the acre, and drag boughs behind the drill so that the seed will be lightly covered. I would recommend mixing the seed thoroughly with the super and sowing from the one box. We have got best results from this method. It is surprising what a difference the super makes to the lucerne, all swamp lands are deficient in lime. The important factors are:—First, grading and levelling; second, quick irrigation; and third, quick drainage. In speaking of grading I have dealt only with the lucerne land, but it applies to the whole area, for only by having the land graded can you irrigate quickly. You cannot grow good crops on low parts where the water lies too long. When the grading is completed then your troubles are chiefly over. In regard to what crops to grow, experience leads me to favor Algerian oats for spring and winter grazing and millet for summer grazing. Sow the oats in late February and early March and drill in with 30lbs. to 50lbs. of super (after irrigating); and if you can manage, keep one paddock for hay. Shut it up against grazing about the middle of August, then irrigate, and you will cut a nice quantity of good hay from it. Sow millet for summer grazing late in October, November, and December, work the land to a fine tilth, broadcast 15lbs. to 20lbs. of seed per acre, harrow it in and then roll and irrigate. Maize can be planted late in October to cut for green feed, and if you have a silo, and I would strongly urge you to get one at the earliest opportunity, plant your requirements for ensilage towards the end of November. There are several methods of planting maize, and no doubt drilling from alternate feed cups is the best, but I have obtained excellent results from ploughing it in. If the land is fairly free from grass and weeds broadcast the seed, and then plough it in 5in. or 6in. deep. Harrow lightly and then irrigate, or, if more convenient, irrigate the land before ploughing. Maize does not require heavy watering and should not be irrigated more than twice during the season.'' An interesting discussion followed, and the speaker replied to numerous questions.

RENMARK (Average annual rainfall, 10.93in.).

September 3rd.—Present: 51 members and visitors.

Planting a Vineyard.—Mr. H. D. Howie read the following paper:—After the land is cleared and burnt off the next job is to get it well ploughed to a depth of, say, eight inches. To do this a single furrow plough is usually employed, although I have seen double furrow ploughs capable of breaking new land well. However, they are not common, and perhaps it is safer to recommend the single furrow plough Get the ploughman to mark the places where he strikes any roots and stumps, and have these attended to at once. They will save broken shares in future workings. Pick up all roots and sticks. After ploughing it is advisable to run a slicker up and down and across the land to facilitate the taking of levels. This will have the effect of dividing the blocks into squares, and the levels can be taken at the intersection of the lines on smooth ground. The distance apart of such lines should be not more than a chain, and the effect will then be to divide the land into square chains. When the levels have been taken and set out on paper, a close study should be made of them to decide the plan of grading and channelling. It is generally recognised that when possible, it is wiser to run the rows for planting vines east and west rather than north and south. As trees are usually planted on the square, this question does not arise with them. The reason for it with vines, is that they suffer less from sunburn on a trellis running east and west than on one running north and south. This is especially applicable to sultana and Gordo vines; less so to currants and Doradillas. So, if it is possible, plan to run your vine rows this way. If the block cannot be laid out as a whole, *i.e.*, to water from one head ditch, it is best to plant the odd pieces with trees, Gordo vines, Doradilla vines, or lucerne, and give the sultana and currant vines the longest run. This plan will save expense in trellising, as with short runs of trellis an inordinate number of strainers and struts is required. The question of channelling will depend largely upon the nature of the soil. If the land is of a sandy nature it will be well not to give more than a 5-chain run to the rows; otherwise overwatering will occur and bring seepage troubles. But if the land consists of box and blue-bush flats, similar to the Block E country, then a much longer run can be safely adopted; and provided the levels allow it, a 10 to 20 acre block can be laid out to water with one head ditch. I have heard the remark "a nice flat block, easy to water" but my experience of very flat blocks is not a happy one, and I prefer a fall of about four to six inches to the chain, especially if the rows are long ones, *i.e.*, over six chains. If the land is very flat, and the drainage good, then the system of watering by flooding has many advantages, and on the stiff flat soils on Renmark avenue it has proved eminently successful. Having decided upon a definite plan of how the block is to be planted, watered and channelled, the next step is to get it graded, and here depends the policy upon which a block can be either "made or marred." If the grading is skimped, and too much left for the furrow to do, there will be always trouble ahead. By this I mean that when rises and knobs are only sufficiently removed to allow the water to run with the aid of a deep furrow, then you will find that there will be many times in the history of that block when the furrow is not deep enough. Much as one dislikes to have to remove too much of the top soil, it is better in the long run to suffer at first the scanty return from such "scraped" patches than to have high places in the block which need "plugging" out with the shovel every time in the block's history that it is watered. True that a good deal can be done later on to remove high places, but it is a tedious and expensive operation buckscraping between rows. When the grading has been completed and the levels re-checked where any difficulties have occurred, the next move is to prepare for planting. Personally, on the experience of my firm, I much prefer the planting of vines in a furrow to the method of planting in holes, and I will describe what we consider the best way to go about it. A marking-out line is necessary to lay your base lines, and it is desirable to have one long enough to do the whole base line in one operation. Having decided on the width of headland you require—and I recommend not less than 18ft.—then it is necessary to mark out these lines with a fairly strong peg at the exact distances apart you require your rows. The planting spaces I favor are 12ft. x 7ft. for sultanas, 12ft. x 10ft. currants, 11ft. x 5ft. Gordos and Doradillas, 20ft. x 20ft. for trees. Having got your base lines properly marked out—and if it is possible it is well to employ some experienced man to do this—then you can prepare the rows for planting. The first requirement is about 90 bamboo stakes about 5ft. long to be used as sighters. These should be sighted along the rows, allowing four sighters to each row, alternating them so as to allow of ploughing up one row and down the next. To make a good job of planting in the furrow method, it is necessary to have a pair of steady horses and a good ploughman. The horses are driven with the row of sighters kept constantly between them, and a double furrow is thrown open, *i.e.*, a cut is taken each way. This operation, if well done, will leave a broad open furrow running from one base line to the other—ready for the pegging out to come right in the bottom of it. Where the land is stiff, or there is anything of a hard pan within 12 inches of the surface, it is advisable to go over these rows again with a subsoil plough, running in the bottom of the opened-up furrow as deep as four horses can break it. This may not be necessary with soils that are at all loose, but the best result my firm ever attained in stiff box land was with this method adopted, not only up and down, but across the block as well, so that every vine was planted at an intersection where the subsoiling met. Fifteen acres of sultanas planted this way showed 97 per cent. take, and remarkably fine growth the first year.

However, whether the subsoiling operation is done or not I still recommend the furrow, as when the pegging-out along the furrow is completed the actual planting can be done very expeditiously and the watering accomplished with a minimum of trouble. The method adopted is to plant the vine in the bottom of the furrow and throw a couple of shovels of loose earth around it, allowing the water, which should be following close behind, to settle the earth around the roots. The planting should be done across the block in sections of, say, ten rows, so that the watering can be kept close on to the planting. When these sections are finished, and the water allowed to soak awhile, but not to burst away, the furrow may be filled in with the plough from both sides within a couple of days. Later on also a couple of more rounds may be made with the plough, which, followed by a single-horse cultivator, will leave the land in order until the next watering. Practically no hand-hoeing will be required, and it will only be necessary to go along the rows to straighten the pegs and remove earth where the vines or pegs have been covered by the plough. The arguments in favour of planting by this method are:—(1) The land is well broken to a good depth around and beneath the vine. (2) The land being so broken absorbs a good supply of water to carry it on. (3) The operation of filling in the furrow and ploughing for two or three more times leaves a well broken-up strip of land which can easily be cultivated by a single horse implement during the rest of of the summer. (4) The operation of irrigation, which is usually a difficult one the first time, is made easy by broad, deep furrows. (5) The flow of the water comes immediately around the vine, settles the soil around its roots, and penetrates to a good depth where it is wanted, immediately beneath the vine. The subsequent cultivation during the next season can be done by either one or two horse implements, and with steady horses and a careful driver the rows of young vines can be straddled, thus avoiding hand-work. Otherwise the hand-hoe must be kept going, and unless the blocker is a competent horsedriver it is as well for him not to try and do too much with the horse implements, or he will find himself minus a goodly quantity of vines after each cultivation. With regard to planting cover crops between the vines, I am in favor of this during the summer only when sufficient space is left for two horses to work around the rows. In sandy country it is necessary to plant something to keep the surface from blowing, but in the stiff lands with which I have been dealing this will not occur to any extent. I would like to emphasize that during the first few years of working box flat or blue bush country, gypsum is almost a necessity, and if a man is working his own horses he must seize every opportunity for carting gypsum. If the trees are planted on stiff land it is a good practice to break it open with explosives—provided the land has never been watered. If it has been watered, explosives will only plug the land, whereas if it is dry they will shatter it for a distance of five or six feet out from the plug. Once the land is planted, watered, and dressed with gypsum, it is only a matter of cultivation, and this resolved itself into a question of implements. If only one horse is available, small tine implements will be used, and a small one-horse disc will be found very useful, if procurable. Such an implement is on the market, but is not often seen. A certain amount of disbudding is often advisable for the shaping of trees in the first year, but this is not usual with vines, unless they are developing a great number of shoots. If the vines are cut back to two eyes at planting no disbudding should be necessary. If any time is left over in the first year after the carting of gypsum—and you cannot have too much gypsum for the Block E land—trellising can be undertaken, though this is usually a second-year operation. In the discussion that followed, Mr. Basey thought that 18 feet was not enough for a headland. It should be at least 20 feet, and he personally preferred from 23 to 25 feet. In the heavy box flats three-horse implements were very advantageous—heavy three-horse discs were very useful for this country—and a lot of head room was needed. This applied also to the gypsum trollies. If the headland was too narrow the horses would always be breaking down the ditch. He quite agreed with furrow planting and filling in with loose earth, if followed immediately by water. But if water did not follow at once he strongly advised the shovelling of three or four inches of earth round the vine, tramping it down, and covering it with a light mulch with the plough. The one-horse disc was very useful and did quite good work up to its capabilities, provided the weeds were kept down and the land constantly worked. But he thought there was only one make on the market. Mr. F. L. McDougall had used a wooden rammer instead of tramping round the roots, and suggested the use of a hoe for furrowing out after the first irrigation. He also thought cross cultivation of considerable value in the first season. In answer to a question concerning the pruning of vines at planting, Mr. Howie said he liked the main roots cut back to three or four inches, the top roots cut off, and only two eyes left at the top of the vine. He preferred to prune the roots early, when the vines were lifted from the nursery during the winter. If they were planting late, and pruned then, the roots bled a good deal. Mr. H. S. Taylor thought the paper a very valuable one and especially useful to new settlers. No reference had been made in it, however, to the relative suitability of different vines for the Block E lands, with special reference to which the paper had been prepared. Mr. Howie said there was often a bit of a hard pan in blue-bush land, and the currant undoubtedly got through it more quickly than the sultana. Box land was different, though there was hard pan also in some of this land, and when this occurred it was very difficult to deal with. If there was no hard pan, sultanas did very well on the box land. He would not advise anyone to plant stone fruits, especially the peach, unless the drainage was good; vines were safer. Pear trees penetrated the stiff soils almost better than vines. In answer to a question concerning the trimming of young vines which had been neglected and were shooting, Mr. Howie said that he would cut back the tops and cut off the top roots. The dormant buds at the base of the tops would come in time. If the roots were very long it would probably be necessary to reduce them back to some extent. Mr. L Pitt, appealed to on the question as one experienced in the Block E country, said he would prune back both roots and top. Mr. E. Morley-Taylor remarked that one important matter frequently neglected in root pruning was the cutting out of all roots likely to cross one another. The roots must go free. And Mr. Basey had found a tip gained from a Mildura man of value; this was to give each vine a slight upwards pull after a little earth had been placed on the roots, so as to give the roots a downward tendency. The combined result of subsoiling and planting in this way was that they could plough deeply and close up to the vines and cut no roots. In other shallow planted blocks their vines had suffered much through the cutting of roots. Mr. Morley-Taylor thought six inches quite deep enough for any vines to be planted, but Mr. Weste favored seven or eight inches, and also practised the upward pull advocated by Mr. Basey. In planting, the only roots he left were those at the bottom of the vine. Mr. Howie had had good results from planting nine inches deep in furrows subsoiled to a depth of 18 inches, and Mr. F. L. McDougall had had a take of 92 per cent. with vines planted about nine inches deep. These were furrow planted in stiff soil and a couple of shovelfuls of sand had been put round each at planting, to fill up the crevices and exclude the air. Mr. F. J. Olorenshaw had planted in a wet season with rain, tramping the earth down round the vines, and had had very poor results. The vines shot well and then dried off. If water did not follow planting the earth dried away, and he never planted now, no matter how wet the soil might be, nor whether it was stiff or sandy without adding a little water. He had been planting this year, and found that a kerosine bucket of water was enough for 15 vines. These vines were now doing nicely, and he did not care if they received no more water for weeks. His advice was never to plant without some water, however little. Mr. Darrington inquired whether Mr. Howie favored manure at the bottom of the vine hole, and was told by that gentleman that he had had good results both with and without manure. He did not think money so spent was wasted, but if he was planting a big area and was pushed for time, he would sooner get the planting done quickly than worry about manure. One thing that should not be omitted on stiff land was gypsum, and when planting in a subsoiled furrow, if they were unable to spread gypsum all over the land, they should at least do the ploughed strip. If possible, it was better to do all the land, but the strip was much better than none. The best plan was to gypsum the land beforehand and let the winter rains carry it down. Mr. Basey remarked that if superphosphate was used it was necessary to have plenty of soil above the manure, with which the roots must not come in contact, and Mr. Richards said that he used super last year with disastrous results. Bonedust, remarked another member, was quite safe. The importance of keeping stable manure, especially if hot, from the roots was also stressed, and also from contact with the stem of tree or vine if used as a mulch. A good deal of discussion was aroused by a question concerning the wisdom of planting summer fodder crops on blocks which could not be got ready for planting with vines or trees this year. The weight of opinion was against the practice on heavy land of the block E type where, it was held, labor would be better spent in the carting and spreading of gypsum and, generally, in thoroughly preparing the land for the next season's planting. The great importance of getting the land perfectly graded before planting was strongly stressed by Messrs. Basey and Morley-Taylor, and Mr. Howie gave a final word of counsel to new settlers on heavy land by advising them to spend all their time in working their land, and getting as much of it as possible subsoiled, in preparation for next year's planting, rather than in the growing of summer crops.

ROSY PINE.

October 28th.—Present: seven members.

FODDER CONSERVATION.—"Why do not farmers realise that one of the greatest mistakes that they make is in not providing an ample supply of fodder for the stock; and what a handicap the lack of fodder is to the proper working of the farm," said Mr. C. A. Schiller in a paper under the title "A Timely Hint." Farmers were often heard to remark, "Oh, there is plenty of time, I will do my fallowing when there is a little more feed about," or "I would like to get on with the fallowing, but I have no feed." When a man was placed in such circumstances he lost the opportunity of making early fallow, and in many instances the land became too hard to make an effective job of the ploughing. That type of farmer turned his horses out when seeding was finished, and thereby did his horses more harm than good, because there was no substance in the feed, and the animals very often contracted sand troubles. The country had been blest with a bountiful season, and every advantage should be taken of the good crops and a plentiful supply of fodder reserved. Sufficient hay should be cut, not only for the present year, but also enough to carry the stock over the next

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year, should conditions not prove so favorable. Another valuable asset was the cocky chaff, and if heaped on a rising piece of land and covered with straw and weighted down with rails it would keep for quite a number of years. It should also be fenced in, so that it would not be spoilt by the stock. A good stack of clean straw had also proved a valuable standby in times of drought, for it served the dual purpose of reserve fodder and shelter for the stock. By having a good supply of fodder on hand the horses could be liberally fed during harvest, wheat carting, and seeding, and would then be in good heart to carry on with the fallowing. After the completion of ploughing the grass would have had time to develop and the horses could then be turned out for a week or two. When they were again brought in they should be gradually fed on hay chaff, in order that they might become accusomed to the change of diet. If that was done he believed there would be very few horses troubled with sand. If the wet season was late the lambing ewes could be given a little hay, and it would make a very marked difference to the condition of both the ewe and the lamb. In the discussion, Mr. A. Camens said the experience of the past few years should have taught the farmers the value of cocky chaff and straw, and he was strongly in favor of making provision for bad seasons. Mr. G. McCabe was also in favor of conserving all forms of fodder. The stock could be allowed the freedom of the stacks of straw and heaps of cocky chaff during the autumn and early winter.

TAPLAN.

October 9th.—Present: 15 members.

Annual Meeting.—The Hon. Secretary (Mr. P. R. Hodge) read the Annual Report, and the officers were elected for the ensuing term.

On October 11th His Excellency the Governor (Sir Archibald Weigall, K.C.M.G.) and suite passed through Taplan, *en route* to the River Murray settlements. The Chairman of the Bureau (Mr. F. McMillan), in a short speech welcomed His Excellency to Taplan. His Excellency displayed a keen interest in the numerous exhibits that had been staged on the platform, and complimented the settlers on the progress they were making in wresting a livelihood from the mallee lands. Lady Weigall addressed a few words to the women of the district, and expressed great admiration for them in sticking to their men through hard times.

COOMANDOOK, October 21st.—The monthly meeting of the Branch took the form of a drive of inspection around the district, when several farms were visited. The Manager of the Kybybolite Experimental Farm (Mr. L. S. Davie) attended and spoke on matters appertaining to general farming practices.

LONE GUM.—Programme of Meetings.—The following is the programme of meetings of the above Branch for the term ending June, 1921:—December 24th, social evening. January 20th, 1921: Paper, "From the Rack to the Packing Shed," Mr. R. E. Downie. February 17th: Paper, "Co-operation and its Aims," Mr. R. A. O'Connor, M.P. March 23rd: Paper, "Bookkeeping." April 20th: Paper, "Vegetable Growing," Mr. W. R. Lewis (Berri). May 18th: Paper, "Rack Building," Mr. M. Harris. June 15th: Paper, "Winter Cultivation," Mr. . G. Savage (Manager Berri Experimental Orchard).

MYPOLONGA, October 27th.—Mr. Martin, a member of the Murray Bridge Herd Testing Society, visited the Branch and gave an address on "Herd Testing."

NETHERTON, October 29th.—Several subjects of local interest were brought forward for discussion, particular interest being evinced in the trouble that sheep-owners were having with the sheep nasal fly.

WAIKERIE, October 12th.—The Assistant Government Veterinary Surgeon (Mr. R. H. F. Macindoe, M.R.C.V.S.) visited the Branch and delivered a lecture, "Colic in Horses."

WILKAWATT, October 30th.—Members discussed the agricultural exhibits that were shown at the Pinnaroo and Lameroo shows. Other matters of local interest were discussed. It was decided to go into recess until the completion of harvesting operations.

WYNARKA, October 2nd.—Mr. J. W. Murphy (late A.I.F.) read an interesting paper, "A Mallee Settler Abroad in Egypt." A very lucid description of the irrigation system and habits and agricultural practices of the Egyptian people was given by the speaker.

SOUTH AND HILLS DISTRICT.

ASHBOURNE.

October 25th.—Present: 15 members.

Lincoln Sheep.—In the course of a paper dealing with this subject, Mr. G. Haines gave a brief outline of the early introduction of the Lincoln sheep into South Australia. After giving a detailed description of the chief characteristics of the ewe and ram of the breed, the speaker said that the pure bred ewes were prolific and good mothers, and if mated to pure bred sires would rear lambs averaging 85lbs. live weight in 18 weeks. If breeding for stud purposes, the lambs would not be marketed but reserved for future sale. Any ram lambs that did not come up to standard could be sold as fat wethers in the winter. For the owner of a large property who made a speciality of cross breeding, the Lincoln ram mated with the Merino ewe would produce wool of excellent quality. The wether lambs could be held over for wool production, as they frequently gave a fleece weighing up to 16lbs. Ewes from that cross mated with a Shropshire or Southdown would be found good mothers for rearing lambs for market. For the frozen meat trade he recommended the Southdowns, as they produced mutton of a very fine quality. The speaker concluded by quoting a list of prices obtained for fat sheep during the past 10 years. Figures were also read which showed the expansion of the frozen meat trade over a period covering 40 years. An interesting discussion followed, in which Messrs. Potter, Meyer, and Kirkham took part.

CYGNET RIVER.

October 21st.—Present: six members.

Potato Culture.—"To grow a payable crop of potatoes without irrigation, only the best black flats along the river should be cultivated, and the sowing should not be commenced until the land is in good condition," said Mr. A. E. Osterstock in a paper on "Potato Cultivation." As the best time for sowing was from October to January, it was most important that as much moisture should be conserved in the soil as possible. The land should be ploughed to a depth of about 6in. during mid-winter, and then cultivated two or three times to check the growth of weeds. In the event of the seeds not being ready at seeding time they should be spread out in a shed until they commenced to shoot, when each seed should be cut into fair-sized setts, each sett containing not less than two eyes. Deep sowing only resulted in uneven crop, and in order to avoid that he recommended sowing about 4in. deep with 1ft. between them in every fourth furrow, thus making the rows about 30in. apart. Stable manure was undoubtedly the best for potatoes, and could easily be spread along the furrows after the setts were planted. The best time for planting was after a good rain, as otherwise the dry surface would be turned on to the setts. The bed should be harrowed when the potatoes were coming up to destroy the weeds and conserve the moisture, or, should rain have fallen soon after planting, the bed should be harrowed to prevent the surface becoming hard and so preventing the potatoes from coming through. When the potatoes were flowering they should be earthed up. That could easily be done with the plough by turning a furrow on each side of each row towards the potatoes. If the seed for the next crop was dug before the plants were fully matured they would give better results than if left until the tops dried off. The best roots could be easily selected before the tops were dry, and could be removed prior to the commencement of digging operations.

HARTLEY (Average annual rainfall, 15in. to 16in.).

September 29th.—Present: 10 members and visitors.

Presentation of Life Membership Certificate.—The monthly meeting of the Branch was held at Mr. B. Wundersitz's residence, when the Chairman (Mr. J. Stanton) presented to Mr. B. Wundersitz a Life Membership Certificate of the Agricultural Bureau, in recognition of services rendered. The delegates to the Annual Congress gave an interesting report of the various sessions, and at the conclusion of the business of the Branch, the meeting took the form of a social gathering. A further meeting was held on October 27th when several questions of local interest were brought before the members.

LENSWOOD AND FOREST RANGE (Average annual rainfall, 35in. to 36in.)

September 25th.—Present: nine members.

How to Obtain Better Prices for Fruit.—In the course of a paper dealing with this subject, Mr. R. Hale said he had been a fruitgrower for a number of years, and could not help noticing the way much of the fruit was put up for sale. There was no doubt that the standard case was a great improvement on the kerosine case, but in many instances one saw the fruit packed in battered and broken cases and in a filthy condition. Could they wonder that good prices were not received, even though the fruit might be of first-class quality? As a remedy for that he suggested that the growers should enforce the sale of the case with the fruit. Speaking of apples, pears, and plums, which were the chief varieties of fruit grown on his orchard, he said that one often found that one grower would market his fruit, graded both as to size and condition, which was as it should be. Another grower would simply grade his crop according to quality, which would have the effect of reducing the price of the fruit packed by the grower who graded his crop according to size and quality. Dealing with second-grade fruits, he believed that it would be better if the growers did not market any ''roughs''. If such fruit was marketed there was no doubt that it affected the prices of the better produce. The fruitgrowers' co-operative factories were able to handle a fair quantity of those fruits, while a certain amount could be dried. In addition to that, one could feed the inferior fruit to pigs. What the growers should do was only to market the first and second grade fruit; the roughs, &c., should be left at home and fed to the pigs. If that was done he believed they would receive better average prices than they did at the present time. In the discussion that followed, members agreed with most of the points brought forward by the writer. Some members thought that in view of the scarcity of timber that the case should not be sold with the fruit. They believed that it was better to use old cases.

LONGWOOD (Average annual rainfall, 37in. to 38in.)

October 16th.—Present: 12 members and visitors.

Homestead Meeting.—The monthly meeting of the Branch was held at Mr. A. Chiles's residence. Members inspected the orchard and vegetable garden. Particular attention was devoted to a grove of 35 orange trees that Mr. Chiles had planted in one of the gullies. As these were the first orange trees that had been tried in that district, Mr. Chiles's efforts were watched with considerable interest. The report of the delegates to the Blackwood Conference was received, and the question of olive growing was discussed. Specimens of root borers were tabled for the purpose of assisting members in identifying these destructive insects.

MACGILLIVRAY (Average annual rainfall, 19in. to 20in.).

October 26th.—Present: five members and six visitors.

Dam Sinking.—In the course of a paper dealing with this subject, Mr. A. J. Nicholls said although Kangaroo Island had an average rainfall of about 25in. one often heard the settlers complaining of the water shortage, should the summer prove a very dry one. He was of the opinion that there were not many holdings on the island where a good holding site for a dam could not be selected. A very simple dam could be made by choosing a sloping piece of land and constructing wings and a bank of earth at one end, in order to throw the water back for a considerable distance. He had used many different kinds of scoops for excavating, but he was convinced that the implement that gave the most satisfaction was a self acting scoop. Excavating could be commenced either on the sides or in the middle. If the work was commenced on the sides, just enough earth should be ploughed up to fill up the scoop, and the machine emptied at the other end of the dam. On the return journey the ridge should be taken up and the scoop tipped at the other end. If a bank was to be erected at the end of the dam one ploughing should be taken out across the end of each floor. The Hon. Secretary (Mr. H. J. Wiadrowski) read the Annual Report, and the officers were elected for the coming term.

MENINGIE (Average annual rainfall, 18.87in.).

October 29th.—Present: six members and visitors.

Mixed Farming.—Mr. A. Thornley, who read a short paper on this subject, said a farmer with 500 acres of land in that district could profitably work his land by putting 250 acres under cultivation every year. One hundred acres should be devoted to wheat, and 50 acres sown with oats, 25 acres of which should be cut for hay. As a rule a good price could be obtained for malting barley, and he suggested drilling in about 70 acres of that crop. For pig feed he recommended the sowing of 15 acres of Cape barley and 10 acres of peas. With a 5 acre plot of lucerne, one should be able to keep about 12 cows, preferably Jerseys or Shorthorns. A farm of the area mentioned above would require 12 horses to work it properly, eight for cultivation purposes, and four light horses for light work, such as riding and driving in the buggy. One hundred ewes could be carried, and if mated with Shropshire rams, early lambs could be produced at a very profitable figure. All seed should be changed every three years, and barley should not be sown on the same piece of land two years in succession. Manure at the rate of 70lbs. to the acre would suit the soil requirements of that district. Mr. G. Johnson tabled a sample of peas that he had brought from England.

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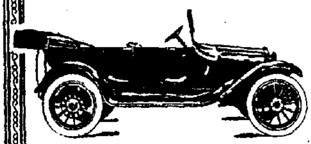

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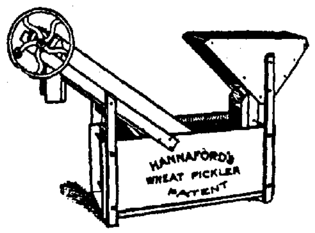

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MILANG.

September 11th.—Present: 34 members.

Messrs. J. E. Pearce and S. H. Goldsworthy read papers from the *Journal of Agriculture*, and an animated discussion followed.

FARM MANAGEMENT.—In the course of a paper under the heading, "How I Work My Farm," Mr. W. Giles said the property he was working contained 195 acres, half of which was subject to inundation by flood waters. When he first took up the block it appeared to him that dairying, combined with pig raising, was the best system to be adopted for working the block. Speaking of the breed of cows, the writer said he always had a preference for the Jersey-Ayrshire cross, particularly so where hand feeding had to be carried on throughout the whole of the year. One of the most important points in the success of the herd was that of feeding, for no matter what class of cow one had, the animals would not give profitable returns unless they were given the right feed. He did not have any special knowledge of food values, but he believed that any dairyman who took a live interest in his work was able to gauge the effect of the food and its relative value probably better than anyone else. The weighing of each cow's milk after each milking, and a knowledge of the butter fat that it contained, was the most effective method of receiving a true analysis. As a district they were most fortunate in having exceptionally nutritive herbage, but although grazing was unquestionably the best way of feeding cows, he always hand fed them, even when there was an abundance of green feed in the paddocks. When the feed was plentiful the amount of chaff could be reduced, but he never made any difference in the bran ration, for he was firmly convinced that it helped to keep the animal in good health and stimulate its appetite. He always fed with chaff and bran during milking, because the cows seemed more contented. Referring to fodders, the speaker said lucerne was perhaps the best fodder for the dairyman, but he had found that if a piece of land was properly prepared and sown with maize better returns would be received with less expense. He had cut as much as 32 tons of green fodder to the acre. His method of sowing maize was to soak the seeds in water overnight, and then sow them broadcast. If the soaked seed was sown through the drill there was a danger of it becoming bruised. He had found it an advantage to sow the crop in half-acre plots at intervals right through the dry season, so that one plot would be ready for cutting as the other ran out. He strongly recommended the subdivision of large paddocks. At the present time his 195 acres was divided into 10 paddocks, and he found that that was none too many. Forty acres under crop, not including the fodders, was about the limit for his holding. 'He had often been told to sell his hay when prices were high, but he contended that if the dairy was to be run successfully the cows should not be stinted. In common with other dairymen, he had found a difficulty in securing labor, and the strain on the hands caused through the milking had in his case led to serious trouble, so that it became necessary to install machines to do the work. The machine on his property was a 2-unit one, driven by a 1½h.p. engine, and it was giving the utmost satisfaction. Since the machine had been in use he had never had second-grade butter, and there was no doubt that one effected a great saving of time and labor. The cost of running the plant during the last year, including new rubbers, had been 4d. per milking. Speaking of pig keeping, the writer said he had kept the Berkshire, Poland China, and Mid-York breeds, but the first two had given the most satisfaction, while a cross between the two first-mentioned breeds made an ideal pig. Whatever class of pig was kept, he urged on members the necessity for having a pure-bred boar at the head of the herd. For fattening the animals he preferred to keep them in small sties and feed them on pollard that had been allowed to soak for 24 hours. In addition to dairying and pig raising, he had also tried potato growing, but unless one was able to irrigate he did not advise putting a very large area under crop. For early planting Bismarks were recommended, and if planted in August they could be gathered before harvest, and a good price secured for early produce. Snowflakes would also give a profitable yield, but these should be sown not later than December, or they would get frostbitten before they had finished growing. He had also planted an acre with currant vines, and judging by the growth that they had made he saw no reason why they should not be grown successfully in that district. The speaker, in conclusion, paid a tribute to the help that he had received from his wife, and said that the success that he had achieved was as much due to her efforts as his own. An interesting discussion followed.

MORPHETT VALE (Average annual rainfall, 23.32in.).

October 28th.—Present: eight members.

An interesting discussion took place on the best time at which to bring cows into milk. Some members contended that the best and most profitable time was during March or April, so that the cows could be dried off about January. Other members considered that it was best to have the cows come in at different intervals in order that a regular supply of milk would be maintained. Mr. Pocock tabled an excellent sheaf of oats that had been grown on mallee land. Mr. Perry also tabled a sample of Indian Runner wheat. In view of approaching harvesting operations it was decided to go into recess until February, 1921.

MOUNT PLEASANT (Average annual rainfall, 26.87in.)

October 8th.—Present: 10 members.

Will It Pay?—In a paper dealing with this question, Mr. D. C. Maxwell said he did not wish members to infer from the title of the paper that everything that was carried out had to be remunerative from a financial standpoint in order to be what he termed payable. The carrying out of various field experiments in many instances did not return direct profits, yet indirectly it did, because the farmer learnt from them better methods that enabled him to work his land and grow crops with a greater measure of success. There were also men in their district who paid very high prices for purebred livestock, and by so doing it was likely that they were actually out of pocket by making such purchases, yet there was no doubt that the district and the State benefited by the introduction of such stock, which helped to raise the standard of flocks and herds. Speaking of the growing of wheat in that district, the writer was of opinion that it did not pay to undertake such work on a very large scale, because land that had carried a crop of wheat usually took two or three years before it would carry a good crop of feed. Overstocking should also be avoided, but if the farmer was prepared to conserve a good supply of reserve fodder, then he should carry as much stock as possible. He was also firmly convinced that proper provision of shelter should be made for the stock. Furze hedges could be made to serve that purpose, and if kept in good order they were an ornament to the farm. In a bad season they could be used for feed, and as a winter shelter he thought they had no equal. There was no doubt that an ill-kept furze hedge was a harbor for rabbits and also dangerous in time of a bush fire, but if two or three chains of furze were planted in the south-west corners of the paddocks and kept in order he felt sure they would benefit by it. An interesting discussion followed. Mr. P. Miller spoke in favor of a hedge of olive trees. Other members agreed that furze made a good hedge, provided it was kept under control.

PORT ELLIOT (Average annual rainfall, 20.33in.)

October 16th.—Present: six members.

Wattle Bark Culture.—Mr. W. W. Hargreaves contributed a paper on this subject, which was read by Mr. R. R. Rose. The paper was as follows:—Australia and Tasmania are the home of the wattles; of these there are many species, but of particular interest to our State is the broad leaf, or *Acacia pycnantha*, growing so prolifically in the Adelaide hills. The cultivation of wattles is not a theoretical matter, for their study is easily understood, and, growing as these trees do on poor soil, the capital required to take up suitable land for their cultivation is not at all a great one, and if an entirely fresh cultivation has to be entered into a period of at least six years has to ensue ere the oldest trees reach mature growth and are ready for stripping. Experts in wattle cultivation never strip the trees until they are of such age that the bark has reached its highest standard in thickness. The condition of the bark at the base of the trees indicates by its darkening and flaking off that the trees have reached the highest point at which to secure the maximum weight of bark and the most profitable remuneration to the grower. If trees are of such a dense character that they are growing on the "whip stick" order, systematic thinning out should be pursued. In our dry climatic conditions growers should in every way discourage the lighting of fires upon their land, for it is a sad picture in Australian life to see the fire demon ruthlessly burning up years of wattle culture, as has happened on more than one occasion in our hills wattle districts. Wattles are readily stripped when blossoming period has ceased and the flow of sap is still upwards, as the bark comes cleanly off the trunk and main stems of the trees. Bark as taken off should be laid out openly, in order to allow a "curl" to take place. This a matter of two to three days. The bark should then be bundled to a size that, when dry, about 40 bundles run to the ton; ½cwt. bundles, tied with bark twine, are much to be preferred, and are readily handled without loss to the grower. Large bundles are not at all a payable proposition to the grower, as they do not allow of a ready drying, and because of the weight there will be considerable loss ere such big bundles reach the grinding mills, and all such losses have to be borne by the bark producer. The man who is hired to strip is far too often indifferent to doing other than the bundling up of his contracted-for stripping. In the stripping process the wattles should be cut close to the ground, and the old order of things, whereby the trunk of the wattle was cut on an angle some 4ft. from the ground, and left to set up the risk of staking a horse should be abolished. All useless residue from the trees should be burned up, and thus eliminate to a very great degree the risk of fire. Where areas of wattle lands are at all great fire breaks should be set up. To insure against fire is a costly item, and to be a sufferer by fire loss is simply to see at least six years' profits sweept away in a few hours. Values of bark for the past season have been fairly satisfactory to growers, for a price of £10 per ton delivered at Victor Harbor is remunerative to growers, but would be even more so under normal conditions of labor supply. Growers can thus look forward to payable rates for their bark in seasons to come, and the money derivable from wattle culture has in many years past proved an excellent standby when other crops have proved failures, so that one can look for a reasonable amount of satisfaction from wattle culture and the expansion of the industry.

BLACKWOOD, October 18th.—Mr. S. W. Chapman gave an interesting address, "Cold Storage of Fruit," and a good discussion followed.

CHERRY GARDENS, October 23rd.—Mr. E. W. Beythein, of the Longwood Branch, visited the Branch and delivered an address on "Egg Production." A large number of members and visitors were present, and numerous questions were answered by the lecturer.

IRON BANK, October 23rd.—The Hon. Secretary (Mr. R. Coats) read extracts from the reports of previous meetings of the Branch. Members also discussed the life history and habits of root borers and the best methods for controlling them.

MEADOWS, October 27th.—The Hon. Secretary (Mr. H. B. Michelmore) read a paper "Benefits to be Derived from Membership of the Bureau," and an interesting discussion followed.

MOUNT BARKER, October 27th.—Mr. H. Jones read a paper, "Improvement of the Dairy Herd." A good discussion followed.

SOUTH-EAST DISTRICT.

KONGORONG.

October 28th.—Present: 16 members and four visitors

Breaking in and Handling of Heifers.—Mr. W. A. Aslin, who contributed a paper dealing with this subject, said when the heifer had calved he always left the calf with its mother for about 12 hours. By doing that, the calf would as a rule, have sucked its mother once, and would be clean and dry. If it was left with the mother for a longer period there was always more difficulty in getting the calf to drink from the bucket. A small portion of the cow yard should be partitioned off, and the young heifer driven into the small yard with another quiet cow, so that she would not have too much room to run about. If the heifer was treated kindly, and taken quietly, there would not be very much difficulty in getting her into the bail. No matter how quiet the heifer was, he always used a leg rope for a few times. He made a strong point of not milking the heifers out of the bail until they were thoroughly broken in, for if they contracted sore teats, or a cut with barbed wire, it was almost certain that they would not stand quietly. If it could possibly be avoided, he did not advise the use of a rope in tying up the cow. If the calf was to be reared, the beastings should be given to it so soon as they were taken from the mother. The main points to be observed in the breaking in of the heifer were to see that the yard was secure, and to treat the animal with all kindness. In the discussion that followed, Mr. C. S. MacLean said he agreed with the speaker that the use of the rope in tying up the cows should be avoided, but when the heifers were very wild one was forced to make use of the rope. Mr. C. T. Atkin had found it a good plan to bring the heifer that was about to calve into the milking yard with the other cows in order that she might become accustomed to persons walking among the animals.

MOORAK.

October 22nd.—Present: 15 members.

Stack Building.—In a short paper dealing with this subject, Mr. G. Dixon said the stack should be built on a level piece of ground, and the bottom covered with a layer of wood or straw to prevent the damp from damaging the hay. The middle of the stack should be kept well filled up, so that during the wet season the water would not run into the stack. When the walls had been completed the eaves could be formed by bringing in each succeeding layer of sheaves about a foot. The stack should be evenly balanced, and built in an easterly and westerly direction.

Ration Sheep.—Mr. A. Kilsby, who contributed a short paper on this subject, said it was a wise policy to keep a few ration sheep for household use. One of the small paddocks adjacent to the homestead would conveniently serve that purpose, and at different times of the year ration sheep could be bought cheaply. By buying low-conditioned lambs the farmer could easily fatten them, and the meat would be tender and tasty. The argument might be used that one household would not be able to use the whole of the sheep, but if that was so part of the carcass could be sold to a neighbor or placed in brine. The Hon. Secretary (Mr. M. P. Fahy) also read a paper, "Improvement of Dairy Herds."

ADVISORY BOARD OF AGRICULTURE.

During the month of November, the Advisory Board of Agriculture paid its usual annual visit to the Agricultural College, Roseworthy. In company with the Principal (Mr. W. J. Colebatch, B.Sc. (Agric.), M.R.C.V.S.), members inspected the more important features of the institution. The Board also made a visit of inspection to the Government Experimental Farm, Booborowie.

CROWN LANDS.

LANDS OPEN FOR APPLICATION.

Open for application till December 17th, 1920:—Pastoral blocks 630, 631, and 632, situate northerly from Tarcoola.

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To be offered at auction on December 23rd, 1920:—Allotments in towns of Alford, Curramulka, and Mindarie.

Full particulars are published in the *Government Gazette*, or may be obtained, with plans on application to the Secretary for Lands, Adelaide.

LANDS TO BE OFFERED SHORTLY.

Additional allotments in the town of Whyalla (Hummock Hill) will be offered at auction at an early date.

Full particulars will be published in the *Government Gazette*, and plans will shortly be available on application to the Secretary for Lands, Adelaide.

APPLICATIONS FOR LAND.

Intending applicants for any lands which are open are reminded that application may be made for the whole or any portion of a block. The Land Board has power to allot portion of a block, if considered advisable, and to adjust the purchase-money or rent. If only portion of a block is applied for, deposit of a proportionate amount must be made, and the successful applicant would be required to pay cost of survey.

ALLOTMENTS, SALES, TRANSFERS, SUBLEASES, AND MORTGAGES.

Notice is hereby given that in future no applications for land, or for transfer, sublease, of mortgage of Crown leases or agreements will be approved to unnaturalised persons of *any* nationality, or to naturalised persons of enemy origin unless the consent of the Honorable the Attorney-General of the Commonwealth be first obtained by the parties making the application.

Where any doubt as to nationality exists, it will be necessary for certificate of birth or naturalisation papers to be exhibited.

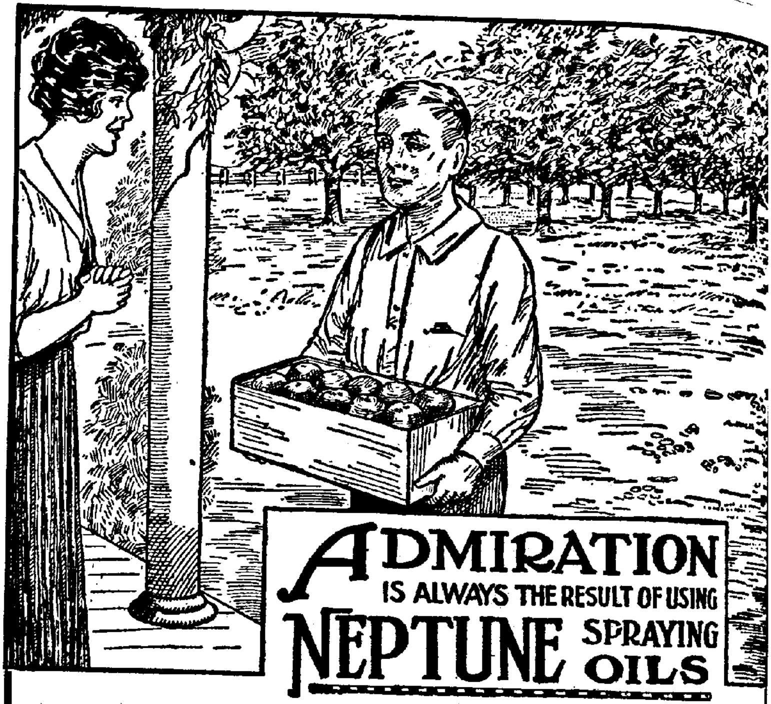
The same principle will apply to land sold by auction.

OFFICIAL LIST OF LANDS OPEN.

The attention of intending applicants for land is directed to the Official List of Lands Open, which may be seen at the principal Post Offices, and copies obtained at the Office of the Secretary for Lands. The List shows the Areas, Localities, Prices, &c., of the Sections available and the conditions under which they may be applied for.

G. R. LAFFER,

Commissioner of Crown Lands and Immigration.



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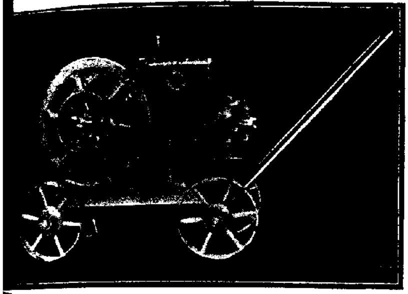

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